Maternal mortality associated with COVID-19 in Brazil in 2020 and 2021: comparison with non-pregnant women and men

Codes and outputs

09/06/2021

Description

This file presents the documentation of the analysis of article "Maternal mortality associated with COVID-19 in Brazil in 2020 and 2021: comparison with non-pregnant women and men".

R packages used, functions and dataset import

The data are analyzed using the free-software R (https://www.R-project.org) in version 4.0.3. Next, we present and load the libraries used in the data analysis process.

```
#load packages
loadlibrary <- function(x) {
  if (!require(x, character.only = TRUE)) {
    install.packages(x, dependencies = T)
    if (!require(x, character.only = TRUE))
      stop("Package not found")
  }
}

packages <-
  c(
    "readr",
    "readxl",
    "janitor",
    "dplyr",
    "forcats",
    "stringr",
    "lubridate",
    "summarytools",
    "magrittr",
    "questionr",
    "knitr",
    "epitools",
    "modelsummary",
    "kableExtra",
    "DescTools",
    "ggplot2"
```

```
    )
lapply(packages, loadlibrary)
```

One can see below the functions that will be used in the data analysis.

```
#functions for summary measures
media <- function(x)
  mean(x, na.rm = TRUE)
mediana <- function(x)
  median(x, na.rm = TRUE)
DP <- function(x)
  sd(x, na.rm = TRUE)
minimo <- function(x)
  base::min(x, na.rm = TRUE)
maximo <- function(x)
  base::max(x, na.rm = TRUE)
q25 <- function(x)
  stats::quantile(x, p = 0.25, na.rm = TRUE)
q75 <- function(x)
  stats::quantile(x, p = 0.75, na.rm = TRUE)
IQR <- function(x)
  round(q75(x) - q25(x), 2)
n <- function(x)
  sum(!is.na(x))
```

```
#Breslow-Day test function
teste_breslowday <- function(dados, var) {
  tab <- array(0, dim = c(2,2,3))
  dat1 <- subset(dados, group == "men")
  tab[,,1] <- table(dat1$period, dat1[[var]])
  dat2 <- subset(dados, group == "women")
  tab[,,2] <- table(dat2$period, dat2[[var]])
  dat3 <- subset(dados, group == "maternal")
  tab[,,3] <- table(dat3$period, dat3[[var]])
  a <- BreslowDayTest(tab[,,c(1,2)], correct = TRUE)
  b <- BreslowDayTest(tab[,,c(1,3)], correct = TRUE)
  c <- BreslowDayTest(tab[,,c(2,3)], correct = TRUE)
  out <- data.frame(comp = c("Men-W", "Men-Mat", "W-Mat"),
                    stat = c(a$statistic, b$statistic, c$statistic),
                    p_valor = c(a$p.value, b$p.value, c$p.value))
  return(out)
}
```

The Influenza Epidemiological Surveillance Information System, SIVEP-Gripe (Sistema de Informação de Vigilância Epidemiológica da Gripe), is a nationwide surveillance database used to monitor severe acute respiratory infections in Brazil.

Notification is mandatory for Influenza Syndrome (characterized by at least two of the following signs and symptoms: fever, even if referred, chills, sore throat, headache, cough, runny nose, olfactory or taste disorders) and who has dyspnea/respiratory discomfort or persistent pressure in the chest or O2 saturation less than 95% in room air or bluish color of the lips or face. Asymptomatic individuals with laboratory confirmation by molecular biology or immunological examination for COVID-19 infection are also reported.

For notifications in Sivep-Gripe, hospitalized cases in both public and private hospitals and all deaths due to severe acute respiratory infections regardless of hospitalization must be considered.

The search was limited to the first notified case of COVID-19 in February 2020 until the 17th epidemiological week of 2021 (up to May 1, 2021). The datasets were obtained on May 6, 2021, on the site https://opendatasus.saude.gov.br/dataset. The first period (8th to 53rd epidemiological week of 2020) and the second period (1st to 17th epidemiological week of 2021) datasets can be obtained at https://drive.google.com/file/d/1jts4h0ovdwFh86SdKyslMLSG9rOy3UjX/view?usp=sharing and at https://drive.google.com/file/d/1gQSy_dcUkd1UrDEcsrDbyGl4gEvcI8z_/view?usp=sharing, respectively. The data are loaded below:

```
#loading the datasets
#2021
data_2021 <- read_delim(
  "INFLUD21-03-05-2021.csv",
  ";",
  escape_double = FALSE,
  locale = locale(encoding = "ISO-8859-2"),
  trim_ws = TRUE
)

#2020
data_2020 <- read_delim(
  "INFLUD-03-05-2021.csv",
  ";",
  escape_double = FALSE,
  locale = locale(encoding = "ISO-8859-2"),
  trim_ws = TRUE
)

sem <- 17 #limit of epidemiological week of 2021

#### Concatenating 2020 and 2021 data ###############
data_all <- rbind(data_2020, data_2021)

# Creating the case year variable
data_all <-  data_all %>%
  dplyr::mutate(
    dt_sint = as.Date(DT_SIN_PRI, format = "%d/%m/%Y"),
    year_case = lubridate::year(dt_sint)
  )
```

There are 1905854 cases in the complete dataset. The case selection is presented in the following according to the flowchart presented in the article.

Case selection and data treatment

The first filter consists of selecting of confirmed cases of SARS by SARS-COV-2. The variable indicating the classification is `CLASSI_FIN`, with the following categories: 1-SARS by influenza, 2-SARS by another respiratory virus, 3-SARS by another etiological agent, 4-SARS not specified, and 5-SARS by COVID-19.

```
questionr::freq(
  data_all$CLASSI_FIN,
  cum = FALSE,
  total = TRUE,
  na.last = FALSE,
```

```
  valid = FALSE
) %>%
  knitr::kable(caption = "Frequency table for case classification", digits = 2) %>%
  kable_styling(latex_options = "hold_position")
```

Table 1: Frequency table for case classification

	n	%
1	3190	0.2
2	8324	0.4
3	4456	0.2
4	518377	27.2
5	1184367	62.1
NA	187140	9.8
Total	1905854	100.0

```
#Selecting only COVID-19 confirmed cases
data1 <- dplyr::filter(data_all, CLASSI_FIN == 5)
```

When considering only COVID-19 confirmed cases, we get 1184367 observations.

The second filtering consists of cases from 8th epidemiological week of 2020 to 17th epidemiological week of 2021.

```
#Cases from the 8th epidemiological week of 2020
data2 <- data1 %>%
  filter((year_case == 2020 & SEM_PRI >= 8) | year_case == 2021)
```

There are 8649 cases in 2021 in epidemiological week 53 of 2020. These are cases from the first two days of 2021, which are still part of the last epidemiological week of 2020 (http://portalsinan.saude.gov.br/calendario-epidemiologico?layout=edit&id=168). However, these cases belong to the 53rd week of 2020 and we corrected as follows:

```
data2 <- data2 %>%
  mutate(year_case = ifelse(year_case == 2021 & SEM_PRI ==53, 2020, year_case)) %>%
  filter(year_case == 2020 | (year_case == 2021 & SEM_PRI <= sem))

# Creation of period variable
data2 <- data2 %>%
  mutate(period = case_when(year_case == 2020 ~ "1st",
                            year_case == 2021 ~ "2st"),
         year_case = as.factor(year_case))
```

There are 1184365 observations.

The next step is to identify maternal population (pregnant or postpartum women). For that, we analyze the `CS_GESTANT` variable. This variable takes the values: 1-1st trimester; 2-2nd trimester; 3-3rd trimester; 4-gestational age ignored; 5-No; 6-Not applicable; 9-Ignored.

Table 2: Frequency table for pregnancy information

	n	%
0	157	0.0
1	846	0.1
2	2287	0.2
3	5470	0.5
4	580	0.0
5	379248	32.0
6	738739	62.4
9	57038	4.8
Total	1184365	100.0

Table 3: Frequency table for puerperium information

	n	%
1	3256	0.3
2	437096	36.9
9	11236	0.9
NA	732777	61.9
Total	1184365	100.0

```
#frequency table for CS_GESTANT
questionr::freq(
  data2$CS_GESTANT,
  cum = FALSE,
  total = TRUE,
  na.last = FALSE,
  valid = FALSE
) %>%
  kable(caption = "Frequency table for pregnancy information", digits = 2)
```

The puerperium indicator variable is `PUERPERA`, with categories 1-yes, 2-no and 9-Ignored.

```
#frequency table for PUERPERA
questionr::freq(
  data2$PUERPERA,
  cum = FALSE,
  total = TRUE,
  na.last = FALSE,
  valid = FALSE
) %>%
  kable(caption = "Frequency table for puerperium information", digits = 2)
```

```
table(data2$CS_GESTANT, data2$PUERPERA)
```

```
##
##          1      2      9
##   0      0     56      0
##   1     18    227      3
```

```
##   2     55    654      9
##   3    480   1379     18
##   4     41    129      4
##   5   2306 152706   2151
##   6    198 266383   7220
##   9    158  15562   1831
```

There are 157 cases with CS_GESTANT = 0, which have no label in the dataset dictionary.

For the analysis of the maternal population (pregnant or puerperal from 10 to 55 years old), non-maternal women (any age) and men (any age) population, we will exclude the cases without information about pregnancy. The age variable is `NU_IDADE_N`.

```
#Creation of the maternal variable (yes and no)
data2 <- data2 %>%
  mutate(
    materna = case_when(
      CS_GESTANT >= 1 & CS_GESTANT <= 4 & NU_IDADE_N >= 10 & NU_IDADE_N <= 55  ~ "yes",
      CS_GESTANT == 5 & PUERPERA == 1  & NU_IDADE_N >= 10 & NU_IDADE_N <= 55 ~ "yes",
      CS_GESTANT == 9 & PUERPERA == 1 & NU_IDADE_N >=10 & NU_IDADE_N <= 55 ~ "yes",
      (CS_GESTANT == 0 | CS_GESTANT == 9) &
        (PUERPERA == 2 | PUERPERA == 9 | is.na(PUERPERA)) ~ NA_character_,
      TRUE ~ "no"
    )
  )
```

Now, we will create the group variable with three categories: maternal, women (non-maternal women) and men.

```
#Criation of group variable
data2 <- data2 %>%
  mutate(
    group = case_when(
      materna == "yes" ~ "maternal",
      materna != "yes"  & CS_SEXO == "F" ~ "women",
       CS_SEXO == "M" ~ "men",
      TRUE ~ NA_character_
    )
  )

#Filtering only valid categories of group
data3 <- data2 %>%
  filter(!is.na(group))
```

There are 1127363 observations.

We are now going to select only the finalized cases (cure or death). The variable is `EVOLUCAO`, with 1 - cure, 2 - death by SARS, 3 - death by other cause.

```
data3 <- data3 %>%
  mutate(death = case_when(
    EVOLUCAO == 1 ~ "cure",
    EVOLUCAO == 2 ~ "death",
    EVOLUCAO == 3 ~ "death",
```

```
    TRUE ~ NA_character_
  ))

data4 <- data3 %>%
  filter(!is.na(death))
```

There are 975109 observations.

```
## arrange the order of group levels
data4$group <- factor(data4$group,
                                levels = c("men", "women", "maternal"))
```

```
#crosstable of group and period
with(data4, table(group, period))
```

```
##           period
## group         1st    2st
##   men      353293 212476
##   women    243947 156023
##   maternal   6073   3297
```

Epidemiologic characteristics

```
# Ethnicity
data4 <-  data4 %>%
  mutate(
    ethnicity = case_when(
      CS_RACA == 1 ~ "white",
      CS_RACA == 2 ~ "black",
      CS_RACA == 3 ~ "yellow",
      CS_RACA == 4 ~ "brown",
      CS_RACA == 5 ~ "indigenous",
      TRUE ~ NA_character_
    )
  )

# Education
data4 <-  data4 %>%
  mutate(
    education = case_when(
      CS_ESCOL_N == 0 ~ "no school",
      CS_ESCOL_N == 1 ~ "fund1",
      CS_ESCOL_N == 2 ~ "fund2",
      CS_ESCOL_N == 3 ~ "high school",
      CS_ESCOL_N == 4 ~ "college",
      TRUE ~ NA_character_
    )
  )

# Age
```

```r
data4 <- data4 %>%
  mutate(age = case_when(TP_IDADE == 1 ~ NU_IDADE_N/365,
                         TP_IDADE == 2 ~ NU_IDADE_N/12,
                         TP_IDADE == 3 ~ NU_IDADE_N
                         ))
data4$age <- ifelse(data4$age < 0, NA, data4$age)
data4$age <- ifelse(data4$age >= 117, NA, data4$age)

# Age group
data4 <-  data4 %>%
  mutate(
    age_group = case_when(
      age <= 19 ~ "<20",
      age >= 20
      & age <= 34 ~ "20-34",
      age >= 35 ~ ">=35",
      TRUE ~ NA_character_
    )
  )
data4$age_group <-
  factor(data4$age_group, levels = c("<20", "20-34", ">=35"))
```

Non-maternal women

```r
data4_aux <- data4 %>%
  filter(group == "women")
```

Ethnicity

```r
with(data4_aux, ctable(ethnicity, period,  prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## ethnicity * period
## Data Frame: data4_aux
##
##
## ------------ -------- ----------------- ----------------- -----------------
##                period               1st               2st             Total
##    ethnicity
##        black             11393 (  5.8%)     6377 (  4.7%)    17770 (  5.4%)
##        brown             82234 ( 41.7%)    51691 ( 38.3%)   133925 ( 40.3%)
##   indigenous               697 (  0.4%)      226 (  0.2%)      923 (  0.3%)
##        white            100109 ( 50.8%)    75534 ( 55.9%)   175643 ( 52.9%)
##       yellow              2554 (  1.3%)     1293 (  1.0%)     3847 (  1.2%)
##        Total            196987 (100.0%)   135121 (100.0%)   332108 (100.0%)
## ------------ -------- ----------------- ----------------- -----------------
##
## ----------------------------
```

```
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    983.169     4       0
## ----------------------------
```

Education

```
with(data4_aux, ctable(education, period, prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## education * period
## Data Frame: data4_aux
##
##
## ------------- -------- ---------------- ---------------- ------------------
##                 period              1st              2st              Total
##     education
##       college            12903 ( 14.0%)    7575 ( 12.9%)    20478 ( 13.6%)
##         fund1            26962 ( 29.2%)   18657 ( 31.8%)    45619 ( 30.3%)
##         fund2            16892 ( 18.3%)   11071 ( 18.9%)    27963 ( 18.5%)
##   high school            27248 ( 29.6%)   16675 ( 28.5%)    43923 ( 29.1%)
##     no school             8193 (  8.9%)    4601 (  7.9%)    12794 (  8.5%)
##         Total            92198 (100.0%)   58579 (100.0%)   150777 (100.0%)
## ------------- -------- ---------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   176.1796     4       0
## ----------------------------
```

Age

```
datasummary((period) ~ age*(n+media+DP+mediana+q25+q75+IQR),
            data = data4_aux, output = 'markdown')
```

	n	media	DP	mediana	q25	q75	IQR
1st	243947.00	61.67	19.16	64.00	50.00	76.00	26.00
2st	156020.00	61.47	17.21	63.00	51.00	74.00	23.00

```
#teste t
t.test(age ~ period, data = data4_aux)
```

```
##
##  Welch Two Sample t-test
##
## data:  age by period
```

```
## t = 3.4011, df = 357624, p-value = 0.0006713
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.08406797 0.31274244
## sample estimates:
## mean in group 1st mean in group 2st
##          61.67301          61.47460
```

Age group

```
with(data4_aux, ctable(age_group, period, prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## age_group * period
## Data Frame: data4_aux
##
##
## ----------- -------- ----------------- ----------------- -----------------
##                period              1st               2st             Total
##   age_group
##         <20             5885 (  2.4%)     2206 (  1.4%)     8091 (  2.0%)
##       20-34            15781 (  6.5%)     8023 (  5.1%)    23804 (  6.0%)
##        >=35           222281 ( 91.1%)   145791 ( 93.4%)   368072 ( 92.0%)
##       Total           243947 (100.0%)   156020 (100.0%)   399967 (100.0%)
## ----------- -------- ----------------- ----------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   806.3402     2       0
## ----------------------------
```

Men

```
data4_aux <- data4 %>%
  filter(group == "men")
```

Ethnicity

```
with(data4_aux, ctable(ethnicity, period,  prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## ethnicity * period
## Data Frame: data4_aux
##
##
## ------------ -------- ----------------- ----------------- -----------------
```

```
##                period               1st               2st             Total
##    ethnicity
##        black             16275 (  5.9%)     8666 (  4.9%)    24941 (  5.5%)
##        brown            120967 ( 43.6%)    70260 ( 39.6%)   191227 ( 42.1%)
##   indigenous              1120 (  0.4%)      317 (  0.2%)     1437 (  0.3%)
##        white            134864 ( 48.7%)    96392 ( 54.3%)   231256 ( 50.9%)
##       yellow              3958 (  1.4%)     1841 (  1.0%)     5799 (  1.3%)
##        Total            277184 (100.0%)   177476 (100.0%)   454660 (100.0%)
## ------------ -------- ----------------- ----------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   1599.691     4       0
## ----------------------------
```

Education

```
with(data4_aux, ctable(education, period, prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## education * period
## Data Frame: data4_aux
##
##
## ------------- -------- ----------------- ---------------- -----------------
##                 period               1st              2st             Total
##     education
##       college             22161 ( 17.1%)   12732 ( 16.3%)    34893 ( 16.8%)
##         fund1             33236 ( 25.7%)   20697 ( 26.5%)    53933 ( 26.0%)
##         fund2             23895 ( 18.5%)   14639 ( 18.7%)    38534 ( 18.6%)
##   high school             41934 ( 32.4%)   25731 ( 33.0%)    67665 ( 32.6%)
##     no school              8119 (  6.3%)    4280 (  5.5%)    12399 (  6.0%)
##         Total            129345 (100.0%)   78079 (100.0%)   207424 (100.0%)
## ------------- -------- ----------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    89.9124     4       0
## ----------------------------
```

Age

```
datasummary((period) ~ age*(n+media+DP+mediana+q25+q75+IQR),
            data = data4_aux, output = 'markdown')
```

	n	media	DP	mediana	q25	q75	IQR
1st	353290.00	58.98	17.99	60.00	47.00	72.00	25.00
2st	212473.00	58.05	16.89	59.00	46.00	70.00	24.00

```
#teste t
t.test(age ~ period, data = data4_aux)
```

```
##
##  Welch Two Sample t-test
##
## data:  age by period
## t = 19.594, df = 469906, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  0.837953 1.024225
## sample estimates:
## mean in group 1st mean in group 2st
##          58.97943          58.04834
```

Age group

```
with(data4_aux, ctable(age_group, period, prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## age_group * period
## Data Frame: data4_aux
##
##
## ----------- -------- ----------------- ----------------- -----------------
##                period              1st               2st             Total
##   age_group
##         <20             7120 (  2.0%)     2571 (  1.2%)     9691 (  1.7%)
##       20-34            23825 (  6.7%)    14685 (  6.9%)    38510 (  6.8%)
##        >=35           322345 ( 91.2%)   195217 ( 91.9%)   517562 ( 91.5%)
##       Total           353290 (100.0%)   212473 (100.0%)   565763 (100.0%)
## ----------- -------- ----------------- ----------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   513.7072     2       0
## ----------------------------
```

Maternal

```
data4_aux <- data4 %>%
  filter(group == "maternal")
```

Ethnicity

```
with(data4_aux, ctable(ethnicity, period,  prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## ethnicity * period
## Data Frame: data4_aux
##
##
## ------------ -------- --------------- --------------- ---------------
##                period             1st             2st           Total
##    ethnicity
##        black             316 (  6.3%)    172 (  6.1%)    488 (  6.2%)
##        brown            2788 ( 55.7%)   1352 ( 48.1%)   4140 ( 52.9%)
##   indigenous              84 (  1.7%)     14 (  0.5%)     98 (  1.3%)
##        white            1765 ( 35.2%)   1252 ( 44.6%)   3017 ( 38.6%)
##       yellow              56 (  1.1%)     20 (  0.7%)     76 (  1.0%)
##        Total            5009 (100.0%)   2810 (100.0%)   7819 (100.0%)
## ------------ -------- --------------- --------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    82.9853     4       0
## ----------------------------
```

Education

```
with(data4_aux, ctable(education, period, prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## education * period
## Data Frame: data4_aux
##
##
## ------------- -------- --------------- --------------- ---------------
##                 period             1st             2st           Total
##     education
##       college             503 ( 18.5%)    279 ( 19.3%)    782 ( 18.8%)
##         fund1             232 (  8.5%)    107 (  7.4%)    339 (  8.1%)
##         fund2             514 ( 18.9%)    281 ( 19.5%)    795 ( 19.1%)
##   high school            1453 ( 53.4%)    767 ( 53.1%)   2220 ( 53.3%)
##     no school              17 (  0.6%)     10 (  0.7%)     27 (  0.6%)
##         Total            2719 (100.0%)   1444 (100.0%)   4163 (100.0%)
## ------------- -------- --------------- --------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    2.0355      4    0.7292
## ----------------------------
```

Age

```
datasummary((period) ~ age*(n+media+DP+mediana+q25+q75+IQR),
            data = data4_aux, output = 'markdown')
```

	n	media	DP	mediana	q25	q75	IQR
1st	6073.00	29.64	7.57	30.00	24.00	35.00	11.00
2st	3297.00	30.85	7.46	31.00	25.00	36.00	11.00

```
#teste t
t.test(age ~ period, data = data4_aux)
```

```
##
##  Welch Two Sample t-test
##
## data:  age by period
## t = -7.4777, df = 6843.5, p-value = 8.506e-14
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.531285 -0.895179
## sample estimates:
## mean in group 1st mean in group 2st
##          29.63906          30.85229
```

Age group

```
with(data4_aux, ctable(age_group, period, prop = "c", useNA = "no", chisq = TRUE, OR = TRUE))
```

```
## Cross-Tabulation, Column Proportions
## age_group * period
## Data Frame: data4_aux
##
##
## ----------- -------- --------------- --------------- ---------------
##                period             1st             2st           Total
##   age_group
##         <20             552 (  9.1%)    173 (  5.2%)    725 (  7.7%)
##       20-34            3925 ( 64.6%)   2091 ( 63.4%)   6016 ( 64.2%)
##        >=35            1596 ( 26.3%)   1033 ( 31.3%)   2629 ( 28.1%)
##       Total            6073 (100.0%)   3297 (100.0%)   9370 (100.0%)
## ----------- -------- --------------- --------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    60.6898     2       0
## ----------------------------
```

Comorbities

```
#Cardiac
data4 <-  data4 %>%
  mutate(cardiac = case_when(CARDIOPATI == 1 ~ "yes",
                             CARDIOPATI == 2 ~ "no",
                             TRUE ~ NA_character_))

#Hematologic
data4 <-  data4 %>%
  mutate(hematologic = case_when(HEMATOLOGI == 1 ~ "yes",
                             HEMATOLOGI == 2 ~ "no",
                             TRUE ~ NA_character_))

#Hepatic
data4 <-  data4 %>%
  mutate(hepatic = case_when(HEPATICA == 1 ~ "yes",
                           HEPATICA == 2 ~ "no",
                           TRUE ~ NA_character_))

#Asthma
data4 <-  data4 %>%
  mutate(asthma = case_when(ASMA == 1 ~ "yes",
                        ASMA == 2 ~ "no",
                        TRUE ~ NA_character_))

#Diabetes
data4 <-  data4 %>%
  mutate(diabetes = case_when(DIABETES == 1 ~ "yes",
                           DIABETES == 2 ~ "no",
                           TRUE ~ NA_character_))

#Neurologic
data4 <-  data4 %>%
  mutate(neurologic = case_when(NEUROLOGIC == 1 ~ "yes",
                             NEUROLOGIC == 2 ~ "no",
                             TRUE ~ NA_character_))

#Pneumologic
data4 <-  data4 %>%
  mutate(pneumologic = case_when(PNEUMOPATI == 1 ~ "yes",
                             PNEUMOPATI == 2 ~ "no",
                             TRUE ~ NA_character_))

#Imunossupression
data4 <-  data4 %>%
  mutate(imuno = case_when(IMUNODEPRE == 1 ~ "yes",
                             IMUNODEPRE == 2 ~ "no",
                             TRUE ~ NA_character_))

#Renal
data4 <-  data4 %>%
  mutate(renal = case_when(RENAL == 1 ~ "yes",
```

```
                            RENAL == 2 ~ "no",
                            TRUE ~ NA_character_))

#Obesity
data4 <-  data4 %>%
  mutate(obesity = case_when(OBESIDADE == 1 ~ "yes",
                             OBESIDADE == 2 ~ "no",
                             TRUE ~ NA_character_))

#Any comorbidity

df <- data4 %>%
  select(cardiac,obesity,hematologic,hepatic,asthma,diabetes,neurologic,pneumologic,imuno,renal)

#if all comorbities in df are NA (not available), return NA.
soma <- function(x){
  if (sum(is.na(x))==10)
    return(NA_character_)
  else
   return(sum(!is.na(x) & x=="yes"))
}
data4$qt_comorb_aux <- apply(df,1,soma)

data4 <- data4 %>%
  mutate(comorbidity = case_when(qt_comorb_aux >=1 ~ "yes",
                                 qt_comorb_aux ==0 ~ "no",
                             TRUE ~ NA_character_))
```

Non-maternal women

```
data4_aux <- data4 %>%
  filter(group == "women")
```

Cardiac

```
with(data4_aux, ctable(period, cardiac, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * cardiac
## Data Frame: data4_aux
##
##
## -------- --------- --------------- ---------------- -----------------
##            cardiac              no              yes             Total
##   period
##      1st             46053 (33.6%)    91019 (66.4%)   137072 (100.0%)
##      2st             28322 (33.5%)    56260 (66.5%)    84582 (100.0%)
##    Total             74375 (33.6%)   147279 (66.4%)   221654 (100.0%)
## -------- --------- --------------- ---------------- -----------------
```

```
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##    0.2945      1    0.5873
## ----------------------------
```

Hematologic

```
with(data4_aux, ctable(period, hematologic, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * hematologic
## Data Frame: data4_aux
##
##
## -------- ------------- ---------------- ------------- -----------------
##            hematologic               no           yes             Total
##   period
##      1st                101755 (98.0%)   2064 (2.0%)   103819 (100.0%)
##      2st                 62986 (98.5%)    981 (1.5%)    63967 (100.0%)
##    Total                164741 (98.2%)   3045 (1.8%)   167786 (100.0%)
## -------- ------------- ---------------- ------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##    45.6243     1       0
## ----------------------------
```

Diabetes

```
ctable(data4_aux$period, data4_aux$diabetes, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * diabetes
## Data Frame: data4_aux
##
##
## -------- ---------- --------------- ---------------- -----------------
##            diabetes              no              yes             Total
##   period
##      1st              60361 (46.9%)    68333 (53.1%)   128694 (100.0%)
##      2st              38682 (49.1%)    40107 (50.9%)    78789 (100.0%)
##    Total              99043 (47.7%)   108440 (52.3%)   207483 (100.0%)
## -------- ---------- --------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
```

```
## ------------- ---- ---------
##    94.1125     1       0
## ----------------------------
```

Obesity

```
ctable(data4_aux$period, data4_aux$obesity, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * obesity
## Data Frame: data4_aux
##
##
## -------- --------- ---------------- --------------- -----------------
##            obesity               no             yes             Total
##   period
##      1st              88813 (83.9%)   17095 (16.1%)   105908 (100.0%)
##      2st              51808 (75.8%)   16567 (24.2%)    68375 (100.0%)
##    Total             140621 (80.7%)   33662 (19.3%)   174283 (100.0%)
## -------- --------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   1743.696     1       0
## ----------------------------
```

Asthma

```
ctable(data4_aux$period, data4_aux$asthma, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * asthma
## Data Frame: data4_aux
##
##
## -------- -------- ---------------- -------------- -----------------
##            asthma               no            yes             Total
##   period
##      1st             97020 (91.9%)    8561 (8.1%)   105581 (100.0%)
##      2st             60264 (92.7%)    4739 (7.3%)    65003 (100.0%)
##    Total            157284 (92.2%)   13300 (7.8%)   170584 (100.0%)
## -------- -------- ---------------- -------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    37.3373     1       0
## ----------------------------
```

Hepatic

```
ctable(data4_aux$period, data4_aux$hepatic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * hepatic
## Data Frame: data4_aux
##
##
## -------- --------- ---------------- ------------- ------------------
##            hepatic                no            yes              Total
##   period
##      1st              101641 (98.3%)   1740 (1.7%)   103381 (100.0%)
##      2st               62830 (98.6%)    921 (1.4%)    63751 (100.0%)
##    Total              164471 (98.4%)   2661 (1.6%)   167132 (100.0%)
## -------- --------- ---------------- ------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    14.1539     1     2e-04
## ----------------------------
```

Neurologic

```
ctable(data4_aux$period, data4_aux$neurologic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * neurologic
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- --------------- ------------------
##            neurologic                no             yes              Total
##   period
##      1st                  95632 (89.3%)   11445 (10.7%)   107077 (100.0%)
##      2st                  59955 (91.9%)    5307 ( 8.1%)    65262 (100.0%)
##    Total                 155587 (90.3%)   16752 ( 9.7%)   172339 (100.0%)
## -------- ------------ ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    301.753     1       0
## ----------------------------
```

Pneumologic

```r
ctable(data4_aux$period, data4_aux$pneumologic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * pneumologic
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- -------------- ------------------
##            pneumologic               no            yes              Total
##   period
##      1st                  96501 (90.7%)    9839 (9.3%)   106340 (100.0%)
##      2st                  60653 (93.1%)    4500 (6.9%)    65153 (100.0%)
##    Total                 157154 (91.6%)   14339 (8.4%)   171493 (100.0%)
## -------- ------------ ---------------- -------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   289.7842     1       0
## ----------------------------
```

Imunossupression

```r
ctable(data4_aux$period, data4_aux$imuno, chisq=TRUE, prop="r", useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * imuno
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- ------------- ------------------
##            imuno               no           yes              Total
##   period
##      1st            97894 (93.5%)   6823 (6.5%)   104717 (100.0%)
##      2st            61309 (95.1%)   3166 (4.9%)    64475 (100.0%)
##    Total           159203 (94.1%)   9989 (5.9%)   169192 (100.0%)
## -------- ------- ---------------- ------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   184.8031     1       0
## ----------------------------
```

Renal

```r
ctable(data4_aux$period, data4_aux$renal, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * renal
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- -------------- ------------------
##            renal                no             yes              Total
##   period
##      1st             96591 (91.4%)    9039 (8.6%)   105630 (100.0%)
##      2st             60461 (93.5%)    4194 (6.5%)    64655 (100.0%)
##    Total            157052 (92.2%)   13233 (7.8%)   170285 (100.0%)
## -------- ------- ---------------- -------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   239.6003     1       0
## ----------------------------
```

Any comorbidity

```
with(data4_aux, ctable(period, comorbidity, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * comorbidity
## Data Frame: data4_aux
##
##
## -------- ------------- -------------- ---------------- ------------------
##            comorbidity             no              yes              Total
##   period
##      1st                 14331 (9.2%)   141625 (90.8%)   155956 (100.0%)
##      2st                  9005 (9.3%)    87680 (90.7%)    96685 (100.0%)
##    Total                 23336 (9.2%)   229305 (90.8%)   252641 (100.0%)
## -------- ------------- -------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    1.0908      1    0.2963
## ----------------------------
```

Men

```
data4_aux <- data4 %>%
  filter(group == "men")
```

Cardiac

```
with(data4_aux, ctable(period, cardiac, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * cardiac
## Data Frame: data4_aux
##
##
## -------- --------- --------------- ---------------- -----------------
##            cardiac              no              yes             Total
##   period
##      1st             61501 (34.6%)   116104 (65.4%)   177605 (100.0%)
##      2st             34330 (34.8%)    64404 (65.2%)    98734 (100.0%)
##    Total             95831 (34.7%)   180508 (65.3%)   276339 (100.0%)
## -------- --------- --------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.5604      1    0.4541
## ----------------------------
```

Hematologic

```
with(data4_aux, ctable(period, hematologic, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * hematologic
## Data Frame: data4_aux
##
##
## -------- ------------- ---------------- ------------- -----------------
##            hematologic               no           yes             Total
##   period
##      1st                131493 (98.2%)   2478 (1.8%)   133971 (100.0%)
##      2st                 73493 (98.6%)   1081 (1.4%)    74574 (100.0%)
##    Total                204986 (98.3%)   3559 (1.7%)   208545 (100.0%)
## -------- ------------- ---------------- ------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    45.4764     1       0
## ----------------------------
```

Diabetes

```r
ctable(data4_aux$period, data4_aux$diabetes, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * diabetes
## Data Frame: data4_aux
##
##
## -------- ---------- ---------------- ---------------- ------------------
##            diabetes               no              yes              Total
##   period
##      1st               81214 (49.1%)    84109 (50.9%)   165323 (100.0%)
##      2st               47610 (52.2%)    43529 (47.8%)    91139 (100.0%)
##    Total              128824 (50.2%)   127638 (49.8%)   256462 (100.0%)
## -------- ---------- ---------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   227.8286     1       0
## ----------------------------
```

Obesity

```r
ctable(data4_aux$period, data4_aux$obesity, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * obesity
## Data Frame: data4_aux
##
##
## -------- --------- ---------------- --------------- ------------------
##            obesity               no             yes              Total
##   period
##      1st             117225 (85.9%)   19291 (14.1%)   136516 (100.0%)
##      2st              61941 (78.4%)   17110 (21.6%)    79051 (100.0%)
##    Total             179166 (83.1%)   36401 (16.9%)   215567 (100.0%)
## -------- --------- ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   2013.036     1       0
## ----------------------------
```

Asthma

```r
ctable(data4_aux$period, data4_aux$asthma, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * asthma
## Data Frame: data4_aux
##
##
## -------- -------- ---------------- -------------- -----------------
##            asthma               no            yes             Total
##   period
##      1st            128291 (94.9%)    6891 (5.1%)   135182 (100.0%)
##      2st             71506 (95.2%)    3644 (4.8%)    75150 (100.0%)
##    Total            199797 (95.0%)   10535 (5.0%)   210332 (100.0%)
## -------- -------- ---------------- -------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    6.2218      1    0.0126
## ----------------------------
```

Hepatic

```
ctable(data4_aux$period, data4_aux$hepatic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * hepatic
## Data Frame: data4_aux
##
##
## -------- --------- ---------------- ------------- -----------------
##            hepatic               no           yes             Total
##   period
##      1st             130225 (97.3%)   3658 (2.7%)   133883 (100.0%)
##      2st              72888 (97.8%)   1604 (2.2%)    74492 (100.0%)
##    Total             203113 (97.5%)   5262 (2.5%)   208375 (100.0%)
## -------- --------- ---------------- ------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    64.9469     1       0
## ----------------------------
```

Neurologic

```
ctable(data4_aux$period, data4_aux$neurologic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * neurologic
## Data Frame: data4_aux
```

```
##
##
## -------- ------------ ---------------- -------------- -----------------
##            neurologic               no            yes             Total
##   period
##      1st                124644 (90.9%)   12492 (9.1%)   137136 (100.0%)
##      2st                 70233 (92.4%)    5753 (7.6%)    75986 (100.0%)
##    Total                194877 (91.4%)   18245 (8.6%)   213122 (100.0%)
## -------- ------------ ---------------- -------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   147.5658     1       0
## ----------------------------
```

Pneumologic

```
ctable(data4_aux$period, data4_aux$pneumologic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * pneumologic
## Data Frame: data4_aux
##
##
## -------- ------------- ---------------- --------------- -----------------
##            pneumologic               no             yes             Total
##   period
##      1st                 123954 (90.1%)   13605 ( 9.9%)   137559 (100.0%)
##      2st                  70263 (92.3%)    5842 ( 7.7%)    76105 (100.0%)
##    Total                 194217 (90.9%)   19447 ( 9.1%)   213664 (100.0%)
## -------- ------------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   290.0507     1       0
## ----------------------------
```

Imunossupression

```
ctable(data4_aux$period, data4_aux$imuno, chisq=TRUE, prop="r", useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * imuno
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- -------------- -----------------
```

```
##            imuno                no             yes              Total
##   period
##      1st            126534 (93.6%)    8722 (6.4%)   135256 (100.0%)
##      2st             71508 (95.2%)    3602 (4.8%)    75110 (100.0%)
##    Total            198042 (94.1%)   12324 (5.9%)   210366 (100.0%)
## -------- ------- ---------------- -------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   238.9235     1       0
## ----------------------------
```

Renal

```
ctable(data4_aux$period, data4_aux$renal, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * renal
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- --------------- ------------------
##            renal                no              yes              Total
##   period
##      1st            122443 (88.7%)   15580 (11.3%)   138023 (100.0%)
##      2st             69604 (91.3%)    6603 ( 8.7%)    76207 (100.0%)
##    Total            192047 (89.6%)   22183 (10.4%)   214230 (100.0%)
## -------- ------- ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   363.7439     1       0
## ----------------------------
```

Any comorbidity

```
with(data4_aux, ctable(period, comorbidity, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * comorbidity
## Data Frame: data4_aux
##
##
## -------- ------------- ---------------- ----------------- ------------------
##            comorbidity               no               yes              Total
##   period
##      1st                  19223 ( 9.4%)   184567 (90.6%)   203790 (100.0%)
```

```
##      2st                 11212 ( 9.8%)   102645 (90.2%)   113857 (100.0%)
##    Total                 30435 ( 9.6%)   287212 (90.4%)   317647 (100.0%)
## -------- ------------- --------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    14.4519     1     1e-04
## ----------------------------
```

Maternal

```
data4_aux <- data4 %>%
  filter(group == "maternal")
```

Cardiac

```
with(data4_aux, ctable(period, cardiac, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * cardiac
## Data Frame: data4_aux
##
##
## -------- --------- -------------- ------------- ---------------
##            cardiac             no           yes           Total
##   period
##      1st             2031 (83.4%)   405 (16.6%)   2436 (100.0%)
##      2st              997 (82.5%)   212 (17.5%)   1209 (100.0%)
##    Total             3028 (83.1%)   617 (16.9%)   3645 (100.0%)
## -------- --------- -------------- ------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.4129      1    0.5205
## ----------------------------
```

Hematologic

```
with(data4_aux, ctable(period, hematologic, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * hematologic
## Data Frame: data4_aux
##
##
```

```
## -------- ------------- -------------- ----------- ---------------
##            hematologic             no         yes           Total
##   period
##      1st                2288 (98.2%)   43 (1.8%)   2331 (100.0%)
##      2st                1144 (98.0%)   23 (2.0%)   1167 (100.0%)
##    Total                3432 (98.1%)   66 (1.9%)   3498 (100.0%)
## -------- ------------- -------------- ----------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.0161      1    0.8991
## ----------------------------
```

Diabetes

```
ctable(data4_aux$period, data4_aux$diabetes, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * diabetes
## Data Frame: data4_aux
##
##
## -------- ---------- -------------- ------------- ---------------
##            diabetes             no           yes           Total
##   period
##      1st               2014 (82.5%)   427 (17.5%)   2441 (100.0%)
##      2st                983 (79.0%)   261 (21.0%)   1244 (100.0%)
##    Total               2997 (81.3%)   688 (18.7%)   3685 (100.0%)
## -------- ---------- -------------- ------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    6.3743      1    0.0116
## ----------------------------
```

Obesity

```
ctable(data4_aux$period, data4_aux$obesity, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * obesity
## Data Frame: data4_aux
##
##
## -------- --------- -------------- ------------- ---------------
##            obesity             no           yes           Total
##   period
```

```
##      1st             2091 (88.8%)   264 (11.2%)   2355 (100.0%)
##      2st              984 (80.7%)   235 (19.3%)   1219 (100.0%)
##    Total             3075 (86.0%)   499 (14.0%)   3574 (100.0%)
## -------- --------- -------------- ------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    42.8546     1       0
## ----------------------------
```

Asthma

```
ctable(data4_aux$period, data4_aux$asthma, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * asthma
## Data Frame: data4_aux
##
##
## -------- -------- -------------- ------------- ---------------
##            asthma             no           yes           Total
##   period
##      1st            2146 (90.2%)   234 ( 9.8%)   2380 (100.0%)
##      2st            1073 (90.2%)   116 ( 9.8%)   1189 (100.0%)
##    Total            3219 (90.2%)   350 ( 9.8%)   3569 (100.0%)
## -------- -------- -------------- ------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##     1e-04      1    0.9903
## ----------------------------
```

Hepatic

```
ctable(data4_aux$period, data4_aux$hepatic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * hepatic
## Data Frame: data4_aux
##
##
## -------- --------- -------------- ----------- ---------------
##            hepatic             no         yes           Total
##   period
##      1st            2284 (99.0%)   24 (1.0%)   2308 (100.0%)
##      2st            1152 (99.3%)    8 (0.7%)   1160 (100.0%)
##    Total            3436 (99.1%)   32 (0.9%)   3468 (100.0%)
```

```
## -------- --------- -------------- ----------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##     0.688      1    0.4068
## ----------------------------
```

Neurologic

```
ctable(data4_aux$period, data4_aux$neurologic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * neurologic
## Data Frame: data4_aux
##
##
## -------- ------------ -------------- ----------- ---------------
##            neurologic             no         yes           Total
##   period
##      1st                2281 (98.3%)   40 (1.7%)   2321 (100.0%)
##      2st                1145 (98.9%)   13 (1.1%)   1158 (100.0%)
##    Total                3426 (98.5%)   53 (1.5%)   3479 (100.0%)
## -------- ------------ -------------- ----------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    1.4797      1    0.2238
## ----------------------------
```

Pneumologic

```
ctable(data4_aux$period, data4_aux$pneumologic, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * pneumologic
## Data Frame: data4_aux
##
##
## -------- ------------- -------------- ----------- ---------------
##            pneumologic             no         yes           Total
##   period
##      1st                 2277 (98.2%)   41 (1.8%)   2318 (100.0%)
##      2st                 1140 (98.1%)   22 (1.9%)   1162 (100.0%)
##    Total                 3417 (98.2%)   63 (1.8%)   3480 (100.0%)
## -------- ------------- -------------- ----------- ---------------
##
## ----------------------------
```

```
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.0156      1    0.9005
## ---------------------------
```

Imunossupression

```
ctable(data4_aux$period, data4_aux$imuno, chisq=TRUE, prop="r", useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * imuno
## Data Frame: data4_aux
##
##
## -------- ------- -------------- ------------ ---------------
##            imuno              no          yes           Total
##   period
##      1st           2241 (96.6%)    79 (3.4%)   2320 (100.0%)
##      2st           1135 (97.4%)    30 (2.6%)   1165 (100.0%)
##    Total           3376 (96.9%)   109 (3.1%)   3485 (100.0%)
## -------- ------- -------------- ------------ ---------------
##
## ---------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    1.5003      1    0.2206
## ---------------------------
```

Renal

```
ctable(data4_aux$period, data4_aux$renal, chisq=TRUE, prop="r",  useNA = "no")
```

```
## Cross-Tabulation, Row Proportions
## period * renal
## Data Frame: data4_aux
##
##
## -------- ------- -------------- ----------- ---------------
##            renal              no         yes           Total
##   period
##      1st           2262 (97.9%)   49 (2.1%)   2311 (100.0%)
##      2st           1132 (98.0%)   23 (2.0%)   1155 (100.0%)
##    Total           3394 (97.9%)   72 (2.1%)   3466 (100.0%)
## -------- ------- -------------- ----------- ---------------
##
## ---------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.0155      1    0.9009
## ---------------------------
```

Any comorbidity

```
with(data4_aux, ctable(period, comorbidity, prop = "r", useNA = "no", chisq = TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * comorbidity
## Data Frame: data4_aux
##
##
## -------- ------------ -------------- -------------- ---------------
##            comorbidity             no            yes           Total
##   period
##      1st                 1486 (54.8%)   1226 (45.2%)   2712 (100.0%)
##      2st                  701 (50.2%)    696 (49.8%)   1397 (100.0%)
##    Total                 2187 (53.2%)   1922 (46.8%)   4109 (100.0%)
## -------- ------------ -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    7.7022      1    0.0055
## ----------------------------
```

Symptoms

```
# Fever
data4 <-  data4 %>%
  mutate(fever = case_when(FEBRE == 1 ~ "yes",
                           FEBRE == 2 ~ "no",
                           TRUE ~ NA_character_))

# Cough
data4 <-  data4 %>%
  mutate(cough = case_when(TOSSE == 1 ~ "yes",
                           TOSSE == 2 ~ "no",
                           TRUE ~ NA_character_))

# Sore throat
data4 <-  data4 %>%
  mutate(sore_throat = case_when(GARGANTA == 1 ~ "yes",
                                 GARGANTA == 2 ~ "no",
                                 TRUE ~ NA_character_))

# Dyspnea
data4 <-  data4 %>%
  mutate(dyspnea = case_when(DISPNEIA == 1 ~ "yes",
                             DISPNEIA == 2 ~ "no",
                             TRUE ~ NA_character_))

# Respiratory discomfort
```

```r
data4 <-  data4 %>%
  mutate(resp_disc = case_when(DESC_RESP == 1 ~ "yes",
                               DESC_RESP == 2 ~ "no",
                               TRUE ~ NA_character_))

# Desaturation
data4 <-  data4 %>%
  mutate(desaturation = case_when(SATURACAO == 1 ~ "yes",
                               SATURACAO == 2 ~ "no",
                               TRUE ~ NA_character_))

# Diarrhea
data4 <-  data4 %>%
  mutate(diarrhea = case_when(DIARREIA == 1 ~ "yes",
                              DIARREIA == 2 ~ "no",
                              TRUE ~ NA_character_))

# Vomit
data4 <-  data4 %>%
  mutate(vomit = case_when(VOMITO == 1 ~ "yes",
                           VOMITO == 2 ~ "no",
                           TRUE ~ NA_character_))

# Abdominal pain
data4 <-  data4 %>%
  mutate(abd_pain = case_when(DOR_ABD == 1 ~ "yes",
                              DOR_ABD == 2 ~ "no",
                              TRUE ~ NA_character_))

# Fatigue
data4 <-  data4 %>%
  mutate(fatigue = case_when(FADIGA == 1 ~ "yes",
                           FADIGA == 2 ~ "no",
                           TRUE ~ NA_character_))

# Olfactory loss
data4 <-  data4 %>%
  mutate(olfac_loss = case_when(PERD_OLFT == 1 ~ "yes",
                               PERD_OLFT == 2 ~ "no",
                               TRUE ~ NA_character_))

# Loss of taste
data4 <-  data4 %>%
  mutate(loss_taste = case_when(PERD_PALA == 1 ~ "yes",
                               PERD_PALA == 2 ~ "no",
                               TRUE ~ NA_character_))

# Any respiratory symptom
df <- data4 %>%
  select(dyspnea,fatigue,desaturation,resp_disc)

soma <- function(x){
  if (sum(is.na(x))==4)
```

```
    return(NA_character_)
  else
    return(sum(!is.na(x) & x=="yes"))
}
data4$qt_sintomas_resp_aux <- apply(df,1,soma)

data4 <-  data4 %>%
  mutate(resp_symp = case_when(qt_sintomas_resp_aux >=1 ~ "yes",
                               qt_sintomas_resp_aux ==0 ~ "no",
                               TRUE ~ NA_character_))
# Any symptom
df <- data4 %>%
  select(dyspnea,fatigue,desaturation,resp_disc,
         fever,cough,sore_throat,diarrhea,vomit,abd_pain,olfac_loss,loss_taste)
soma <- function(x){
  if (sum(is.na(x))==12)
    return(NA_character_)
  else
    return(sum(!is.na(x) & x=="yes"))
}
data4$qt_sintomas_aux <- apply(df,1,soma)

data4 <-  data4 %>%
  mutate(symptom = case_when(qt_sintomas_aux >= 1 ~ "yes",
                             qt_sintomas_aux == 0 ~ "no",
                             TRUE ~ NA_character_))
```

Non-maternal women

```
data4_aux <- data4 %>%
  filter(group == "women")
```

Fever

```
with(data4_aux, ctable(period, fever, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * fever
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- ---------------- -----------------
##            fever               no              yes             Total
##   period
##      1st            70791 (33.8%)   138543 (66.2%)   209334 (100.0%)
##      2st            48559 (37.7%)    80294 (62.3%)   128853 (100.0%)
##    Total           119350 (35.3%)   218837 (64.7%)   338187 (100.0%)
## -------- ------- ---------------- ---------------- -----------------
##
```

```
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   522.4617     1       0
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     0.84        0.83       0.86
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     0.90       0.90      0.90
## --------------------------------
```

Cough

```
with(data4_aux, ctable(period, cough, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * cough
## Data Frame: data4_aux
##
##
## -------- ------- --------------- ---------------- -----------------
##             cough               no               yes              Total
##   period
##      1st           48901 (22.7%)   166697 (77.3%)   215598 (100.0%)
##      2st           30906 (22.9%)   103934 (77.1%)   134840 (100.0%)
##    Total           79807 (22.8%)   270631 (77.2%)   350438 (100.0%)
## -------- ------- --------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    2.6793      1    0.1017
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     0.99        0.97       1.00
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     0.99       0.99      0.99
## --------------------------------
```

Sore throat

```
with(data4_aux, ctable(period, sore_throat, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * sore_throat
## Data Frame: data4_aux
##
##
## -------- ------------- ---------------- --------------- ------------------
##            sore_throat               no             yes              Total
##   period
##      1st                135505 (75.2%)   44588 (24.8%)   180093 (100.0%)
##      2st                 82201 (75.0%)   27429 (25.0%)   109630 (100.0%)
##    Total                217706 (75.1%)   72017 (24.9%)   289723 (100.0%)
## -------- ------------- ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    2.4769      1    0.1155
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.01        1.00       1.03
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.00       1.00      1.00
## -------------------------------
```

Dyspnea

```
with(data4_aux, ctable(period, dyspnea, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * dyspnea
## Data Frame: data4_aux
##
##
## -------- --------- --------------- ---------------- ------------------
##            dyspnea              no              yes              Total
##   period
##      1st             47292 (21.9%)   169052 (78.1%)   216344 (100.0%)
##      2st             23886 (17.3%)   114424 (82.7%)   138310 (100.0%)
##    Total             71178 (20.1%)   283476 (79.9%)   354654 (100.0%)
```

```
## -------- --------- --------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   1107.652     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.34        1.32       1.36
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.27       1.27      1.27
## --------------------------------
```

Respiratory discomfort

```
with(data4_aux, ctable(period, resp_disc, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * resp_disc
## Data Frame: data4_aux
##
##
## -------- ----------- --------------- ---------------- ------------------
##            resp_disc              no              yes              Total
##   period
##      1st               64622 (32.0%)   137170 (68.0%)   201792 (100.0%)
##      2st               35312 (27.6%)    92738 (72.4%)   128050 (100.0%)
##    Total               99934 (30.3%)   229908 (69.7%)   329842 (100.0%)
## -------- ----------- --------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   733.4955     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.24        1.22       1.26
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
```

```
##     1.16       1.16      1.16
## ---------------------------------
```

Desaturation

```
with(data4_aux, ctable(period, desaturation, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * desaturation
## Data Frame: data4_aux
##
##
## -------- -------------- --------------- ---------------- ------------------
##            desaturation              no              yes              Total
##   period
##      1st                  64320 (31.5%)   140133 (68.5%)   204453 (100.0%)
##      2st                  27174 (20.4%)   106303 (79.6%)   133477 (100.0%)
##    Total                  91494 (27.1%)   246436 (72.9%)   337930 (100.0%)
## -------- -------------- --------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   5039.702     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.80        1.77       1.82
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.55       1.55      1.55
## -------------------------------
```

Diarrhea

```
with(data4_aux, ctable(period, diarrhea, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * diarrhea
## Data Frame: data4_aux
##
##
## -------- ---------- ---------------- --------------- ------------------
##            diarrhea               no             yes              Total
```

```
##   period
##      1st              141519 (79.3%)   36947 (20.7%)   178466 (100.0%)
##      2st               85662 (78.6%)   23266 (21.4%)   108928 (100.0%)
##    Total              227181 (79.0%)   60213 (21.0%)   287394 (100.0%)
## -------- ---------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    17.5642     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.04        1.02       1.06
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01        1.01      1.01
## -------------------------------
```

Vomit

```
with(data4_aux, ctable(period, vomit, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * vomit
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- --------------- -----------------
##            vomit                no             yes              Total
##   period
##      1st           151913 (86.9%)   22918 (13.1%)   174831 (100.0%)
##      2st            91636 (86.0%)   14934 (14.0%)   106570 (100.0%)
##    Total           243549 (86.5%)   37852 (13.5%)   281401 (100.0%)
## -------- ------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    46.468      1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.08        1.06       1.10
## ---------------------------------
```

```
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Abdominal pain

```
with(data4_aux, ctable(period, abd_pain, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * abd_pain
## Data Frame: data4_aux
##
##
## -------- ---------- ---------------- --------------- -----------------
##            abd_pain               no             yes             Total
##   period
##      1st               99041 (91.3%)    9466 ( 8.7%)   108507 (100.0%)
##      2st               93536 (90.2%)   10118 ( 9.8%)   103654 (100.0%)
##    Total              192577 (90.8%)   19584 ( 9.2%)   212161 (100.0%)
## -------- ---------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    67.9761     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.13        1.10       1.17
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Fatigue

```
with(data4_aux, ctable(period, fatigue, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * fatigue
## Data Frame: data4_aux
```

```
##
##
## -------- --------- ---------------- --------------- -----------------
##            fatigue               no             yes             Total
##   period
##      1st              78791 (70.1%)   33533 (29.9%)   112324 (100.0%)
##      2st              66836 (60.3%)   44042 (39.7%)   110878 (100.0%)
##    Total             145627 (65.2%)   77575 (34.8%)   223202 (100.0%)
## -------- --------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   2395.366     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.55        1.52       1.58
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.16       1.16      1.16
## -------------------------------
```

Olfactory loss

```
with(data4_aux, ctable(period, olfac_loss, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * olfac_loss
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- --------------- -----------------
##            olfac_loss               no             yes             Total
##   period
##      1st                92696 (84.7%)   16743 (15.3%)   109439 (100.0%)
##      2st                88651 (84.3%)   16495 (15.7%)   105146 (100.0%)
##    Total               181347 (84.5%)   33238 (15.5%)   214585 (100.0%)
## -------- ------------ ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    6.1622      1    0.0131
## ----------------------------
##
## ---------------------------------
```

```
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.03        1.01       1.05
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.00       1.00      1.00
## --------------------------------
```

Loss of taste

```
with(data4_aux, ctable(period, loss_taste, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * loss_taste
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- --------------- -----------------
##            loss_taste               no             yes             Total
##   period
##      1st                 92282 (84.6%)   16838 (15.4%)   109120 (100.0%)
##      2st                 88312 (84.1%)   16712 (15.9%)   105024 (100.0%)
##    Total                180594 (84.3%)   33550 (15.7%)   214144 (100.0%)
## -------- ------------ ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    9.3673      1    0.0022
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.04        1.01       1.06
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Any respiratory symptom

```
with(data4_aux, ctable(period, resp_symp, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * resp_symp
## Data Frame: data4_aux
##
##
## -------- ----------- -------------- ---------------- -----------------
##            resp_symp             no              yes             Total
##   period
##      1st               20726 (9.1%)   207555 (90.9%)   228281 (100.0%)
##      2st                8042 (5.4%)   139735 (94.6%)   147777 (100.0%)
##    Total               28768 (7.6%)   347290 (92.4%)   376058 (100.0%)
## -------- ----------- -------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   1679.289     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.74        1.69       1.78
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.67       1.67      1.67
## -------------------------------
```

Any symptom

```
with(data4_aux, ctable(period, symptom, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * symptom
## Data Frame: data4_aux
##
##
## -------- --------- ------------ ---------------- -----------------
##            symptom            no              yes             Total
##   period
##      1st             3394 (1.4%)   233905 (98.6%)   237299 (100.0%)
##      2st             1449 (1.0%)   151028 (99.0%)   152477 (100.0%)
##    Total             4843 (1.2%)   384933 (98.8%)   389776 (100.0%)
## -------- --------- ------------ ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   173.8773     1       0
```

```
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.51        1.42       1.61
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.51       1.51      1.51
## -------------------------------
```

Men

```
data4_aux <- data4 %>%
  filter(group == "men")
```

Fever

```
with(data4_aux, ctable(period, fever, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * fever
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- ---------------- ------------------
##            fever               no              yes              Total
##   period
##      1st            81559 (26.4%)   226803 (73.6%)   308362 (100.0%)
##      2st            55425 (31.1%)   122752 (68.9%)   178177 (100.0%)
##    Total           136984 (28.2%)   349555 (71.8%)   486539 (100.0%)
## -------- ------- ---------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    1210.84     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     0.80        0.79       0.81
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
```

```
## ------------ --------- ---------
##     0.85       0.85      0.85
## --------------------------------
```

Cough

```
with(data4_aux, ctable(period, cough, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * cough
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- ---------------- -----------------
##            cough                no               yes              Total
##   period
##      1st             63883 (20.4%)   248973 (79.6%)   312856 (100.0%)
##      2st             39359 (21.5%)   143355 (78.5%)   182714 (100.0%)
##    Total            103242 (20.8%)   392328 (79.2%)   495570 (100.0%)
## -------- ------- ---------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    87.9791     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     0.93        0.92       0.95
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     0.95       0.95      0.95
## --------------------------------
```

Sore throat

```
with(data4_aux, ctable(period, sore_throat, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * sore_throat
## Data Frame: data4_aux
##
##
## -------- ------------- ---------------- ---------------- -----------------
```

```
##            sore_throat               no             yes             Total
##   period
##      1st                195314 (76.1%)   61288 (23.9%)   256602 (100.0%)
##      2st                111143 (75.7%)   35734 (24.3%)   146877 (100.0%)
##    Total                306457 (76.0%)   97022 (24.0%)   403479 (100.0%)
## -------- ------------- ---------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    10.0917     1    0.0015
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.02        1.01       1.04
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Dyspnea

```
with(data4_aux, ctable(period, dyspnea, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * dyspnea
## Data Frame: data4_aux
##
##
## -------- --------- --------------- ---------------- ------------------
##            dyspnea               no              yes              Total
##   period
##      1st              66023 (21.2%)   245924 (78.8%)   311947 (100.0%)
##      2st              32210 (17.2%)   155289 (82.8%)   187499 (100.0%)
##    Total              98233 (19.7%)   401213 (80.3%)   499446 (100.0%)
## -------- --------- --------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   1177.415     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.29        1.28       1.31
```

```
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.23       1.23      1.23
## --------------------------------
```

Respiratory discomfort

```
with(data4_aux, ctable(period, resp_disc, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * resp_disc
## Data Frame: data4_aux
##
##
## -------- ----------- ---------------- ---------------- -----------------
##            resp_disc               no              yes             Total
##   period
##      1st                91853 (31.7%)   198115 (68.3%)   289968 (100.0%)
##      2st                47637 (27.5%)   125306 (72.5%)   172943 (100.0%)
##    Total               139490 (30.1%)   323421 (69.9%)   462911 (100.0%)
## -------- ----------- ---------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   878.3532     1       0
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.22        1.20       1.24
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.15       1.15      1.15
## --------------------------------
```

Desaturation

```
with(data4_aux, ctable(period, desaturation, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * desaturation
```

```
## Data Frame: data4_aux
##
##
## -------- -------------- ---------------- ---------------- ------------------
##            desaturation               no              yes              Total
##   period
##      1st                    88800 (30.2%)   205273 (69.8%)   294073 (100.0%)
##      2st                    36236 (20.1%)   144085 (79.9%)   180321 (100.0%)
##    Total                   125036 (26.4%)   349358 (73.6%)   474394 (100.0%)
## -------- -------------- ---------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   5875.594     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.72        1.70       1.74
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.50        1.50      1.50
## -------------------------------
```

Diarrhea

```
with(data4_aux, ctable(period, diarrhea, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * diarrhea
## Data Frame: data4_aux
##
##
## -------- ---------- ---------------- --------------- ------------------
##            diarrhea                no             yes              Total
##   period
##      1st               208467 (82.5%)   44238 (17.5%)   252705 (100.0%)
##      2st               118061 (81.5%)   26881 (18.5%)   144942 (100.0%)
##    Total               326528 (82.1%)   71119 (17.9%)   397647 (100.0%)
## -------- ---------- ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##    67.799      1       0
## ----------------------------
##
```

```
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.07        1.06       1.09
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Vomit

```
with(data4_aux, ctable(period, vomit, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * vomit
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- --------------- -----------------
##             vomit                no             yes              Total
##   period
##      1st           223866 (90.5%)   23506 ( 9.5%)   247372 (100.0%)
##      2st           127062 (89.8%)   14368 (10.2%)   141430 (100.0%)
##    Total           350928 (90.3%)   37874 ( 9.7%)   388802 (100.0%)
## -------- ------- ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    44.0752     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.08        1.05       1.10
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Abdominal pain

```r
with(data4_aux, ctable(period, abd_pain, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * abd_pain
## Data Frame: data4_aux
##
##
## -------- ---------- ---------------- -------------- ------------------
##            abd_pain               no            yes              Total
##   period
##      1st              140469 (92.8%)   10965 (7.2%)   151434 (100.0%)
##      2st              126851 (91.5%)   11826 (8.5%)   138677 (100.0%)
##    Total              267320 (92.1%)   22791 (7.9%)   290111 (100.0%)
## -------- ---------- ---------------- -------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   165.4457     1       0
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.19        1.16       1.23
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## --------------------------------
```

Fatigue

```r
with(data4_aux, ctable(period, fatigue, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * fatigue
## Data Frame: data4_aux
##
##
## -------- --------- ---------------- ---------------- ------------------
##            fatigue               no              yes              Total
##   period
##      1st             111650 (71.0%)    45628 (29.0%)   157278 (100.0%)
##      2st              90955 (61.2%)    57574 (38.8%)   148529 (100.0%)
##    Total             202605 (66.3%)   103202 (33.7%)   305807 (100.0%)
## -------- --------- ---------------- ---------------- ------------------
##
```

```
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   3248.592     1       0
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.55        1.53       1.57
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.16        1.16      1.16
## --------------------------------
```

Olfactory loss

```
with(data4_aux, ctable(period, olfac_loss, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * olfac_loss
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- --------------- ------------------
##            olfac_loss               no             yes              Total
##   period
##      1st                130918 (85.5%)   22185 (14.5%)   153103 (100.0%)
##      2st                119530 (84.9%)   21251 (15.1%)   140781 (100.0%)
##    Total                250448 (85.2%)   43436 (14.8%)   293884 (100.0%)
## -------- ------------ ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    21.2533     1       0
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.05        1.03       1.07
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01        1.01      1.01
## --------------------------------
```

Loss of taste

```
with(data4_aux, ctable(period, loss_taste, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * loss_taste
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- --------------- ------------------
##            loss_taste               no             yes              Total
##   period
##      1st                130353 (85.4%)   22262 (14.6%)   152615 (100.0%)
##      2st                118949 (84.6%)   21667 (15.4%)   140616 (100.0%)
##    Total                249302 (85.0%)   43929 (15.0%)   293231 (100.0%)
## -------- ------------ ---------------- --------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    38.7223     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.07        1.05       1.09
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## -------------------------------
```

Any respiratory symptom

```
with(data4_aux, ctable(period, resp_symp, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * resp_symp
## Data Frame: data4_aux
##
##
## -------- ----------- -------------- ---------------- ------------------
##            resp_symp             no              yes              Total
##   period
##      1st               28563 (8.7%)   301008 (91.3%)   329571 (100.0%)
##      2st               11002 (5.5%)   189235 (94.5%)   200237 (100.0%)
##    Total               39565 (7.5%)   490243 (92.5%)   529808 (100.0%)
```

```
## -------- ----------- -------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   1813.466     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.63        1.60       1.67
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.58       1.58      1.58
## --------------------------------
```

Any symptom

```
with(data4_aux, ctable(period, symptom, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * symptom
## Data Frame: data4_aux
##
##
## -------- --------- ------------- ---------------- -----------------
##            symptom             no               yes              Total
##   period
##      1st              4319 (1.3%)   339154 (98.7%)   343473 (100.0%)
##      2st              1824 (0.9%)   205057 (99.1%)   206881 (100.0%)
##    Total              6143 (1.1%)   544211 (98.9%)   550354 (100.0%)
## -------- --------- ------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   164.8493     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.43        1.36       1.51
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
```

```
##     1.43       1.43      1.43
## ------------------------------
```

Maternal

```
data4_aux <- data4 %>%
  filter(group == "maternal")
```

Fever

```
with(data4_aux, ctable(period, fever, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * fever
## Data Frame: data4_aux
##
##
## -------- ------- -------------- -------------- ---------------
##            fever             no            yes           Total
##   period
##      1st           1973 (36.7%)   3403 (63.3%)   5376 (100.0%)
##      2st           1035 (37.3%)   1741 (62.7%)   2776 (100.0%)
##    Total           3008 (36.9%)   5144 (63.1%)   8152 (100.0%)
## -------- ------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.2434      1    0.6218
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     0.98        0.89       1.07
## ----------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     0.98       0.98      0.98
## -------------------------------
```

Cough

```
with(data4_aux, ctable(period, cough, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * cough
## Data Frame: data4_aux
##
##
## -------- ------- -------------- -------------- ---------------
##            cough             no            yes           Total
##   period
##      1st           1532 (28.0%)   3949 (72.0%)   5481 (100.0%)
##      2st            723 (24.7%)   2204 (75.3%)   2927 (100.0%)
##    Total           2255 (26.8%)   6153 (73.2%)   8408 (100.0%)
## -------- ------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    10.1039     1    0.0015
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.18        1.07       1.31
## ----------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.13       1.13      1.13
## --------------------------------
```

Sore throat

```
with(data4_aux, ctable(period, sore_throat, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * sore_throat
## Data Frame: data4_aux
##
##
## -------- ------------- -------------- -------------- ---------------
##            sore_throat             no            yes           Total
##   period
##      1st                 3523 (73.0%)   1305 (27.0%)   4828 (100.0%)
##      2st                 1742 (71.7%)    686 (28.3%)   2428 (100.0%)
##    Total                 5265 (72.6%)   1991 (27.4%)   7256 (100.0%)
## -------- ------------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    1.1547      1    0.2826
```

```
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.06        0.95       1.19
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.02       1.02      1.02
## -------------------------------
```

Dyspnea

```
with(data4_aux, ctable(period, dyspnea, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * dyspnea
## Data Frame: data4_aux
##
##
## -------- --------- -------------- -------------- ---------------
##            dyspnea             no            yes           Total
##   period
##      1st             2316 (44.0%)   2952 (56.0%)   5268 (100.0%)
##      2st              873 (30.6%)   1984 (69.4%)   2857 (100.0%)
##    Total             3189 (39.2%)   4936 (60.8%)   8125 (100.0%)
## -------- --------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   139.0798     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.78        1.62       1.96
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.44       1.44      1.44
## -------------------------------
```

Respiratory discomfort

```
with(data4_aux, ctable(period, resp_disc, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * resp_disc
## Data Frame: data4_aux
##
##
## -------- ----------- -------------- -------------- ---------------
##            resp_disc             no            yes           Total
##   period
##      1st               2641 (52.2%)   2417 (47.8%)   5058 (100.0%)
##      2st               1110 (41.8%)   1544 (58.2%)   2654 (100.0%)
##    Total               3751 (48.6%)   3961 (51.4%)   7712 (100.0%)
## -------- ----------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    74.8128     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.52        1.38       1.67
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.25       1.25      1.25
## -------------------------------
```

Desaturation

```
with(data4_aux, ctable(period, desaturation, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * desaturation
## Data Frame: data4_aux
##
##
## -------- -------------- -------------- -------------- ---------------
##            desaturation             no            yes           Total
##   period
##      1st                  3362 (68.0%)   1581 (32.0%)   4943 (100.0%)
##      2st                  1224 (45.7%)   1452 (54.3%)   2676 (100.0%)
##    Total                  4586 (60.2%)   3033 (39.8%)   7619 (100.0%)
```

```
## -------- -------------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   358.5899     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     2.52        2.29       2.78
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.49       1.49      1.49
## --------------------------------
```

Diarrhea

```
with(data4_aux, ctable(period, diarrhea, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * diarrhea
## Data Frame: data4_aux
##
##
## -------- ---------- -------------- -------------- ---------------
##            diarrhea             no            yes           Total
##   period
##      1st              4050 (86.3%)    644 (13.7%)   4694 (100.0%)
##      2st              1987 (84.2%)    373 (15.8%)   2360 (100.0%)
##    Total              6037 (85.6%)   1017 (14.4%)   7054 (100.0%)
## -------- ---------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    5.3676      1    0.0205
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.18        1.03       1.36
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
```

```
##     1.02       1.02      1.02
## ------------------------------
```

Vomit

```
with(data4_aux, ctable(period, vomit, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * vomit
## Data Frame: data4_aux
##
##
## -------- ------- -------------- ------------- ---------------
##            vomit             no           yes           Total
##   period
##      1st           4073 (87.2%)   600 (12.8%)   4673 (100.0%)
##      2st           2023 (86.5%)   317 (13.5%)   2340 (100.0%)
##    Total           6096 (86.9%)   917 (13.1%)   7013 (100.0%)
## -------- ------- -------------- ------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##    0.6255      1     0.429
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.06        0.92       1.23
## ---------------------------------
##
## ------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01       1.01      1.01
## ------------------------------
```

Abdominal pain

```
with(data4_aux, ctable(period, abd_pain, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * abd_pain
## Data Frame: data4_aux
##
##
## -------- ---------- -------------- ------------- ---------------
##            abd_pain             no           yes           Total
```

```
##   period
##      1st              2309 (90.1%)   254 ( 9.9%)   2563 (100.0%)
##      2st              2013 (88.7%)   256 (11.3%)   2269 (100.0%)
##    Total              4322 (89.4%)   510 (10.6%)   4832 (100.0%)
## -------- ---------- -------------- ------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    2.2574      1     0.133
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.16        0.96       1.39
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.02       1.02      1.02
## -------------------------------
```

Fatigue

```
with(data4_aux, ctable(period, fatigue, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * fatigue
## Data Frame: data4_aux
##
##
## -------- --------- -------------- -------------- ---------------
##            fatigue              no            yes           Total
##   period
##      1st             2051 (79.1%)    543 (20.9%)   2594 (100.0%)
##      2st             1552 (64.8%)    843 (35.2%)   2395 (100.0%)
##    Total             3603 (72.2%)   1386 (27.8%)   4989 (100.0%)
## -------- --------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   125.5977     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     2.05        1.81       2.33
## ---------------------------------
```

```
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.22       1.22      1.22
## --------------------------------
```

Olfactory loss

```
with(data4_aux, ctable(period, olfac_loss, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * olfac_loss
## Data Frame: data4_aux
##
##
## -------- ------------ -------------- -------------- ---------------
##            olfac_loss             no            yes           Total
##   period
##      1st                1997 (74.8%)    673 (25.2%)   2670 (100.0%)
##      2st                1804 (76.3%)    560 (23.7%)   2364 (100.0%)
##    Total                3801 (75.5%)   1233 (24.5%)   5034 (100.0%)
## -------- ------------ -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    1.4799      1    0.2238
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     0.92        0.81       1.05
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     0.98       0.98      0.98
## --------------------------------
```

Loss of taste

```
with(data4_aux, ctable(period, loss_taste, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * loss_taste
## Data Frame: data4_aux
```

```
##
##
## -------- ------------ -------------- -------------- ---------------
##            loss_taste             no            yes           Total
##   period
##      1st                2042 (77.6%)    589 (22.4%)   2631 (100.0%)
##      2st                1828 (77.4%)    533 (22.6%)   2361 (100.0%)
##    Total                3870 (77.5%)   1122 (22.5%)   4992 (100.0%)
## -------- ------------ -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    0.0157      1    0.9004
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.01        0.88       1.15
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.00       1.00      1.00
## -------------------------------
```

Any respiratory symptom

```
with(data4_aux, ctable(period, resp_symp, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * resp_symp
## Data Frame: data4_aux
##
##
## -------- ----------- -------------- -------------- ---------------
##            resp_symp             no            yes           Total
##   period
##      1st               1678 (30.6%)   3813 (69.4%)   5491 (100.0%)
##      2st                537 (17.9%)   2470 (82.1%)   3007 (100.0%)
##    Total               2215 (26.1%)   6283 (73.9%)   8498 (100.0%)
## -------- ----------- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   161.9791     1       0
## ----------------------------
##
## ---------------------------------
```

```
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     2.02        1.81       2.26
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.71        1.71      1.71
## -------------------------------
```

Any symptom

```
with(data4_aux, ctable(period, symptom, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * symptom
## Data Frame: data4_aux
##
##
## -------- --------- ------------ -------------- ---------------
##             symptom            no             yes            Total
##   period
##      1st              449 (7.6%)   5430 (92.4%)   5879 (100.0%)
##      2st              135 (4.2%)   3065 (95.8%)   3200 (100.0%)
##    Total              584 (6.4%)   8495 (93.6%)   9079 (100.0%)
## -------- --------- ------------ -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    39.6698     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.88        1.54       2.29
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.81        1.81      1.81
## -------------------------------
```

Breslow-Day test for symptoms

Fever

```
teste_breslowday(data4, "fever")
```

```
##      comp      stat      p_valor
## 1   Men-W 35.899929 2.077163e-09
## 2 Men-Mat 17.232699 3.306952e-05
## 3   W-Mat  8.599406 3.362726e-03
```

Cough

```
teste_breslowday(data4, "cough")
```

```
##      comp     stat      p_valor
## 1   Men-W 24.30978 8.202165e-07
## 2 Men-Mat 19.87181 8.281249e-06
## 3   W-Mat 11.70725 6.225718e-04
```

Sore throat

```
teste_breslowday(data4, "sore_throat")
```

```
##      comp      stat   p_valor
## 1   Men-W 0.7800993 0.3771108
## 2 Men-Mat 0.4333493 0.5103500
## 3   W-Mat 0.7056254 0.4008999
```

Dyspnea

```
teste_breslowday(data4, "dyspnea")
```

```
##      comp      stat      p_valor
## 1   Men-W  8.993359 2.709625e-03
## 2 Men-Mat 41.551323 1.148167e-10
## 3   W-Mat 32.722069 1.063232e-08
```

Respiratory discomfort

```
teste_breslowday(data4, "resp_disc")
```

```
##      comp      stat      p_valor
## 1   Men-W  1.941662 1.634882e-01
## 2 Men-Mat 20.340600 6.481069e-06
## 3   W-Mat 17.638371 2.671437e-05
```

Desaturation

```
teste_breslowday(data4, "desaturation")
```

```
##      comp     stat      p_valor
## 1   Men-W 15.40436 8.678793e-05
## 2 Men-Mat 59.17231 1.443290e-14
## 3   W-Mat 46.27470 1.027822e-11
```

Diarrhea

```
teste_breslowday(data4, "diarrhea")
```

```
##      comp     stat    p_valor
## 1   Men-W 5.892043 0.01520945
## 2 Men-Mat 1.806451 0.17893450
## 3   W-Mat 3.154060 0.07573832
```

Vomit

```
teste_breslowday(data4, "vomit")
```

```
##      comp       stat   p_valor
## 1   Men-W 0.03759229 0.8462641
## 2 Men-Mat 0.02682619 0.8698988
## 3   W-Mat 0.04185617 0.8378942
```

Abdominal pain

```
teste_breslowday(data4, "abd_pain")
```

```
##      comp       stat    p_valor
## 1   Men-W 6.94961024 0.00838375
## 2 Men-Mat 0.11808923 0.73111619
## 3   W-Mat 0.05011052 0.82287106
```

Fatigue

```
teste_breslowday(data4, "fatigue")
```

```
##      comp         stat      p_valor
## 1   Men-W  0.001052149 9.741237e-01
## 2 Men-Mat 18.775324006 1.470576e-05
## 3   W-Mat 18.732934778 1.503629e-05
```

Olfactory loss

```
teste_breslowday(data4, "olfac_loss")
```

```
##      comp     stat    p_valor
## 1   Men-W 1.336055 0.24773079
## 2 Men-Mat 3.822407 0.05057154
## 3   W-Mat 2.801208 0.09419332
```

Loss of taste

```
teste_breslowday(data4, "loss_taste")
```

```
##      comp      stat   p_valor
## 1   Men-W 3.1541699 0.0757332
## 2 Men-Mat 0.6103359 0.4346614
## 3   W-Mat 0.1385533 0.7097235
```

Any respiratory symptom

```
teste_breslowday(data4, "resp_symp")
```

```
##      comp     stat      p_valor
## 1   Men-W 11.72929 0.0006152402
## 2 Men-Mat 14.24393 0.0001605782
## 3   W-Mat  7.18121 0.0073671015
```

Any symptom

```
teste_breslowday(data4, "symptom")
```

```
##      comp     stat     p_valor
## 1   Men-W 1.687800 0.193891201
## 2 Men-Mat 6.749462 0.009377597
## 3   W-Mat 4.206313 0.040273785
```

Outcome

```
# ICU
data4 <- data4 %>%
  mutate(icu = case_when(UTI == 1 ~ "yes",
                         UTI == 2 ~ "no",
                         TRUE ~ NA_character_))
```

```r
# Intubation
data4 <- data4 %>%
  mutate(intubation = case_when(SUPORT_VEN == 1 ~ "yes",
                                SUPORT_VEN == 2 | SUPORT_VEN == 3 ~ "no",
                                TRUE ~ NA_character_))
```

Non-maternal women

```r
data4_aux <- data4 %>%
  filter(group == "women")
```

ICU

```r
with(data4_aux, ctable(period, icu, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * icu
## Data Frame: data4_aux
##
##
## -------- ----- ---------------- ---------------- ------------------
##            icu               no              yes              Total
##   period
##      1st         132331 (63.4%)    76281 (36.6%)   208612 (100.0%)
##      2st          86421 (63.0%)    50789 (37.0%)   137210 (100.0%)
##    Total         218752 (63.3%)   127070 (36.7%)   345822 (100.0%)
## -------- ----- ---------------- ---------------- ------------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    7.1776      1    0.0074
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.02        1.01       1.03
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.01        1.01      1.01
## -------------------------------
```

Intubation

```
with(data4_aux, ctable(period, intubation, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * intubation
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- --------------- -----------------
##            intubation               no             yes             Total
##   period
##      1st                165916 (80.3%)   40791 (19.7%)   206707 (100.0%)
##      2st                101990 (74.8%)   34304 (25.2%)   136294 (100.0%)
##    Total                267906 (78.1%)   75095 (21.9%)   343001 (100.0%)
## -------- ------------ ---------------- --------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   1418.724     1       0
## ----------------------------
##
## ----------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.37        1.35       1.39
## ----------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.07       1.07      1.07
## -------------------------------
```

Death

```
with(data4_aux, ctable(period, death, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * death
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- ---------------- -----------------
##            death              cure            death             Total
##   period
##      1st           158591 (65.0%)    85356 (35.0%)   243947 (100.0%)
##      2st            87922 (56.4%)    68101 (43.6%)   156023 (100.0%)
##    Total           246513 (61.6%)   153457 (38.4%)   399970 (100.0%)
```

```
## -------- ------- ---------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   3016.588     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.44        1.42       1.46
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.15       1.15      1.15
## --------------------------------
```

Men

```
data4_aux <- data4 %>%
  filter(group == "men")
```

ICU

```
with(data4_aux, ctable(period, icu, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * icu
## Data Frame: data4_aux
##
##
## -------- ----- ---------------- ---------------- -----------------
##            icu                no               yes              Total
##   period
##      1st          182808 (60.4%)   119690 (39.6%)   302498 (100.0%)
##      2st          113420 (60.9%)    72831 (39.1%)   186251 (100.0%)
##    Total          296228 (60.6%)   192521 (39.4%)   488749 (100.0%)
## -------- ----- ---------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##    10.3545     1    0.0013
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
```

```
## ------------ ---------- ----------
##     0.98        0.97       0.99
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     0.99       0.99      0.99
## --------------------------------
```

Intubation

```
with(data4_aux, ctable(period, intubation, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * intubation
## Data Frame: data4_aux
##
##
## -------- ------------ ---------------- ---------------- -----------------
##            intubation               no              yes             Total
##   period
##      1st                232478 (78.4%)    64019 (21.6%)   296497 (100.0%)
##      2st                137236 (74.7%)    46591 (25.3%)   183827 (100.0%)
##    Total                369714 (77.0%)   110610 (23.0%)   480324 (100.0%)
## -------- ------------ ---------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   901.6002     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.23        1.22       1.25
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.05       1.05      1.05
## --------------------------------
```

Death

```
with(data4_aux, ctable(period, death, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
```

```
## period * death
## Data Frame: data4_aux
##
##
## -------- ------- ---------------- ---------------- -----------------
##            death              cure            death              Total
##   period
##      1st           225622 (63.9%)   127671 (36.1%)   353293 (100.0%)
##      2st           122025 (57.4%)    90451 (42.6%)   212476 (100.0%)
##    Total           347647 (61.4%)   218122 (38.6%)   565769 (100.0%)
## -------- ------- ---------------- ---------------- -----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   2317.195     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.31        1.30       1.32
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.11       1.11      1.11
## --------------------------------
```

Maternal

```
data4_aux <- data4 %>%
  filter(group == "maternal")
```

ICU

```
with(data4_aux, ctable(period, icu, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * icu
## Data Frame: data4_aux
##
##
## -------- ----- -------------- -------------- ---------------
##            icu             no            yes           Total
##   period
##      1st         4143 (76.9%)   1245 (23.1%)   5388 (100.0%)
##      2st         2038 (67.5%)    981 (32.5%)   3019 (100.0%)
##    Total         6181 (73.5%)   2226 (26.5%)   8407 (100.0%)
```

```
## -------- ----- -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##    87.1033     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     1.60        1.45       1.77
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.14       1.14      1.14
## --------------------------------
```

Intubation

```
with(data4_aux, ctable(period, intubation, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * intubation
## Data Frame: data4_aux
##
##
## -------- ------------ -------------- -------------- ---------------
##            intubation             no            yes           Total
##   period
##      1st                4772 (90.0%)    531 (10.0%)   5303 (100.0%)
##      2st                2434 (81.7%)    547 (18.3%)   2981 (100.0%)
##    Total                7206 (87.0%)   1078 (13.0%)   8284 (100.0%)
## -------- ------------ -------------- -------------- ---------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------- ---- ---------
##   116.4201     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     2.02        1.78       2.30
## ---------------------------------
##
## --------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
```

```
##     1.10       1.10      1.10
## --------------------------------
```

Death

```
with(data4_aux, ctable(period, death, prop = "r", useNA = "no", chisq = TRUE, OR=TRUE))
```

```
## Cross-Tabulation, Row Proportions
## period * death
## Data Frame: data4_aux
##
##
## -------- ------- -------------- -------------- ----------------
##             death            cure           death            Total
##   period
##      1st           5617 (92.5%)    456 ( 7.5%)   6073 (100.0%)
##      2st           2722 (82.6%)    575 (17.4%)   3297 (100.0%)
##    Total           8339 (89.0%)   1031 (11.0%)   9370 (100.0%)
## -------- ------- -------------- -------------- ----------------
##
## ----------------------------
##  Chi.squared   df   p.value
## ------------ ---- ---------
##   214.2229     1       0
## ----------------------------
##
## ---------------------------------
##  Odds Ratio   Lo - 95%   Hi - 95%
## ------------ ---------- ----------
##     2.60        2.28       2.97
## ---------------------------------
##
## -------------------------------
##  Risk Ratio   Lo - 0%   Hi - 0%
## ------------ --------- ---------
##     1.12       1.12      1.12
## -------------------------------
```

Breslow-Day test for outcomes

ICU

```
teste_breslowday(data4, "icu")
```

```
##      comp     stat      p_valor
## 1   Men-W 17.01110 3.716199e-05
## 2 Men-Mat 93.65464 0.000000e+00
## 3   W-Mat 78.85453 0.000000e+00
```

Intubation

```
teste_breslowday(data4, "intubation")
```

```
##      comp     stat      p_valor
## 1   Men-W 91.69200 0.000000e+00
## 2 Men-Mat 56.32542 6.139533e-14
## 3   W-Mat 34.73811 3.771744e-09
```

Death

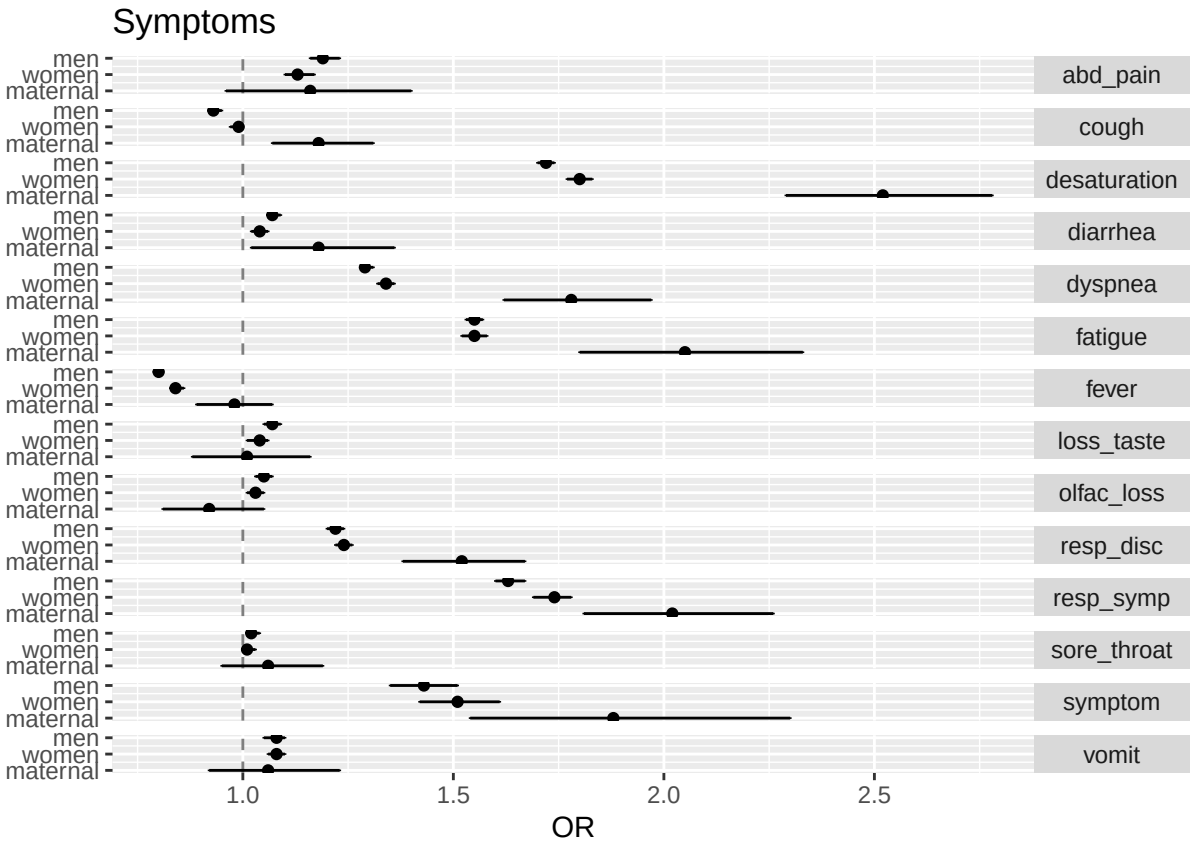
```
teste_breslowday(data4, "death")
```

```
##      comp      stat p_valor
## 1   Men-W 117.02564       0
## 2 Men-Mat 107.23841       0
## 3   W-Mat  79.09201       0
```

Forest plot

For symptoms

```
sints <- c("resp_symp","symptom","dyspnea","fatigue","desaturation","resp_disc","fever","cough","sore_t

or_symptoms <- or_forest(data4, var = "resp_symp")
for (i in 2:length(sints)){
 b <- or_forest(data4, var = sints[i])
 or_symptoms <- rbind(or_symptoms, b)
}

or_symptoms <- cbind(index = 1: dim(or_symptoms)[1], or_symptoms)

## Forest plot for symptoms
xname <- expression(paste("OR"))
p <- ggplot(data=or_symptoms, aes(y=index, x=or, xmin=li, xmax=ls))+
  geom_point()+
  geom_errorbarh(height=.1)+
  scale_y_continuous(name = "", breaks=1:42, labels = or_symptoms$group, trans="reverse")+
  geom_vline(xintercept=1, color="black", linetype="dashed", alpha=.5)+
  facet_grid(var~.,  scales= "free", space="free") +
  theme(strip.text.y = element_text(angle = 0)) +
  labs(title="Symptoms", x ="OR")

ggsave(p, file="OR_symptoms.pdf", width = 10, height=8, dpi=300)

ggsave(p, file="OR_symptoms.png", width = 10, height=8, dpi=300)

p
```



For outcomes

```
desf <- c("icu", "intubation", "death")

or_outcomes <- or_forest(data4, var = "icu")
for (i in 2:length(desf)){
 b <- or_forest(data4, var = desf[i])
 or_outcomes <- rbind(or_outcomes, b)
}

or_outcomes <- cbind(index = 1: dim(or_outcomes)[1], or_outcomes)

## Forest plot for symptoms
xname <- expression(paste("OR"))
p <- ggplot(data=or_outcomes, aes(y=index, x=or, xmin=li, xmax=ls))+
  geom_point()+
  geom_errorbarh(height=.1)+
  scale_y_continuous(name = "", breaks=1:9, labels = or_outcomes$group, trans="reverse")+
  geom_vline(xintercept=1, color="black", linetype="dashed", alpha=.5)+
  facet_grid(var~.,  scales= "free", space="free")+
  theme(strip.text.y = element_text(angle = 0)) +
  labs(title= "Outcomes", x ="OR")

ggsave(p, file="OR_outcomes.pdf", width = 10, height=8, dpi=300)
```

```
ggsave(p, file="OR_outcomes.png", width = 10, height=8, dpi=300)

p
```