

# **Séries Temporais**

## Visualização de Dados

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# Objetivo

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- Aplicar técnicas de **visualização de dados** utilizando bases de dados **orientados a tempo** ou **séries temporais**.
- Diversos exemplos foram gerados.
- Dinâmica de Apresentação: **Base de dados** – **Código R** – **Gráfico Resultante**.
- Ferramenta Utilizada: **IDE RStudio 1.0.153** (linguagem R).

## Detailed information

Dataset title	Monthly milk production: pounds per cow. Jan 62 – Dec 75, adjusted for month length
Last updated	1 Feb 2014, 19:52
Last updated by source	20 Jun 2012
Provider	<a href="#">Time Series Data Library</a>
Provider source	Cryer (1986)
Source URL	<a href="http://datamarket.com/data/list/?q=provider:tsdl">http://datamarket.com/data/list/?q=provider:tsdl</a>
Units	Pounds per cow
Dataset metrics	156 fact values in 1 timeseries.
Time granularity	Month
Time range	Jan 1962 – Dec 1974
Language	English
License	<a href="#">Default open license</a>
License summary	This data release is licensed as follows: You may copy and redistribute the data. You may make derivative works from the data. You may use the data for commercial purposes. You may not sublicense the data when redistributing it. You may not redistribute the data under a different license. Source attribution on any use of this data: Must refer source.
Description	Agriculture, Source: Cryer (1986), in file: data/milkadj, Description: Monthly milk production: pounds per cow. Jan 62 – Dec 75, adjusted for month length

### Fonte dos dados:

<https://datamarket.com/data/set/22sn/monthly-milk-production-pounds-per-cow-jan-62-dec-75-adjusted-for-month-length#!ds=22sn&display=line>

Select

Display

Export

### Monthly milk production: pounds per cow. Jan 62 – Dec 75, adjusted for month length

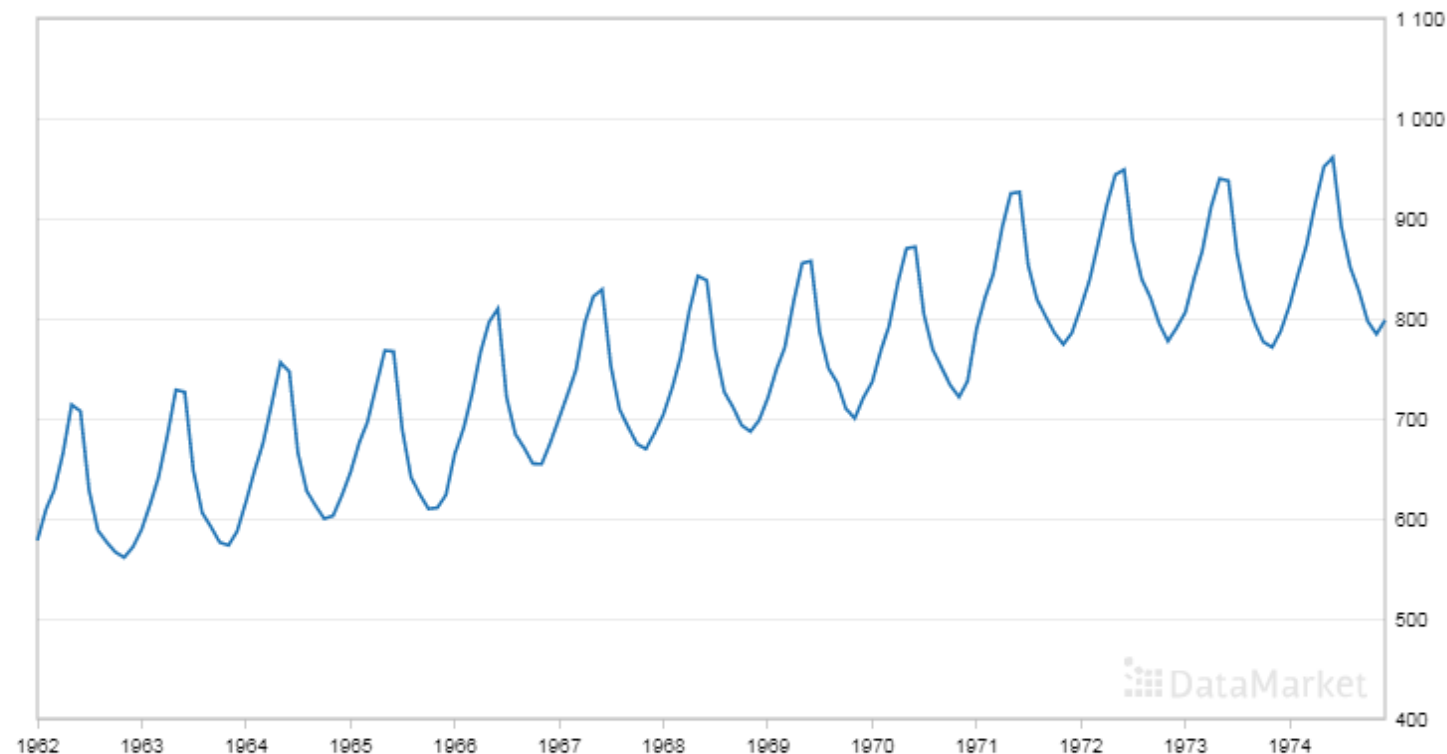
This dataset does not have any  
selectable dimensions.

[+ Add another dataset](#)

1 series selected

## Monthly milk production: pounds per cow. Jan 62 – Dec 75, adjusted for month length

Units: Pounds per cow



Monthly milk production: pounds per cow. Jan  
62 – Dec 75, adjusted for month length

Source: Time Series Data Library (citing: Cryer (1986))

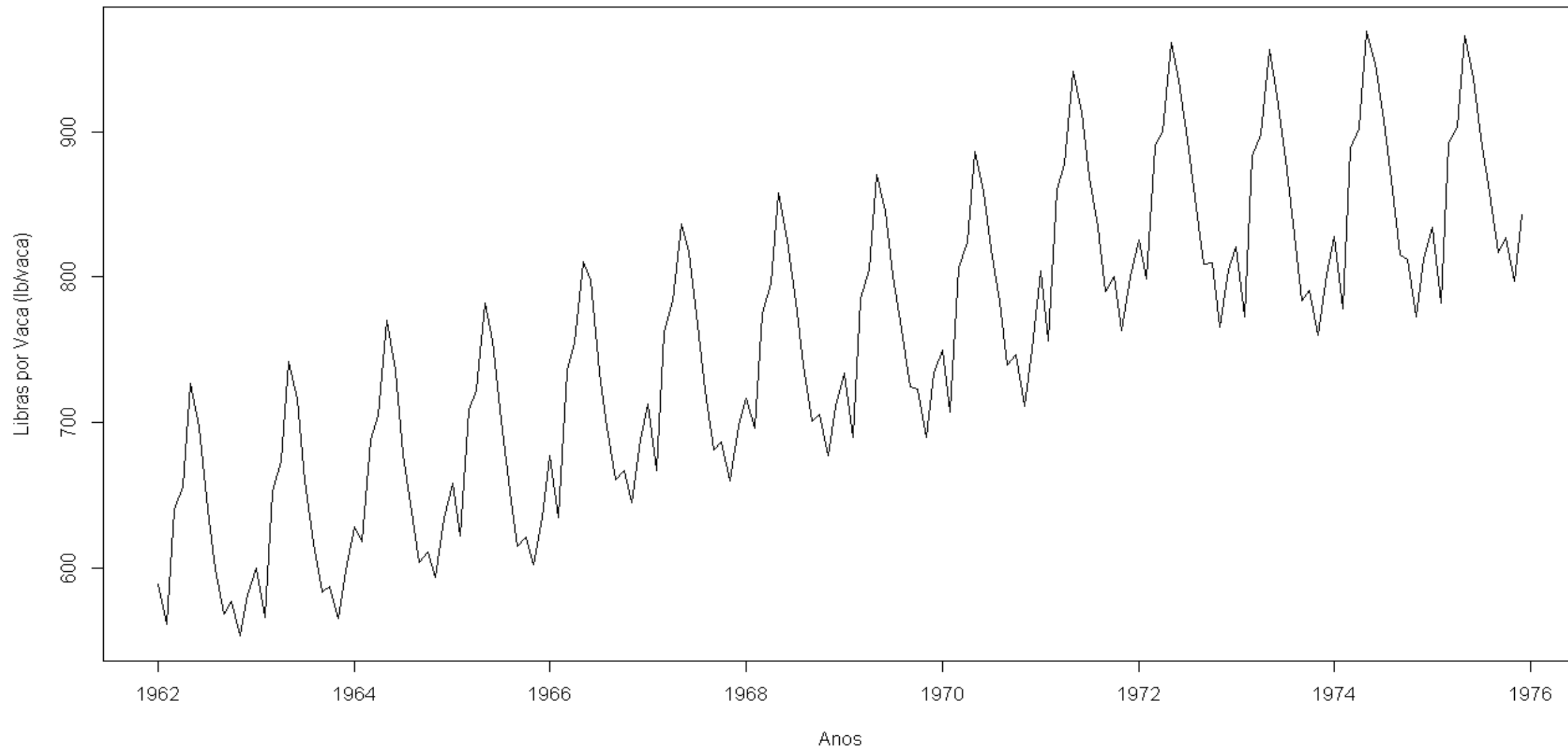
[Show detailed information](#)

Fonte dos dados: <https://datamarket.com/data/set/22sn/monthly-milk-production-pounds-per-cow-jan-62-dec-75-adjusted-for-month-length#!ds=22sn&display=line>



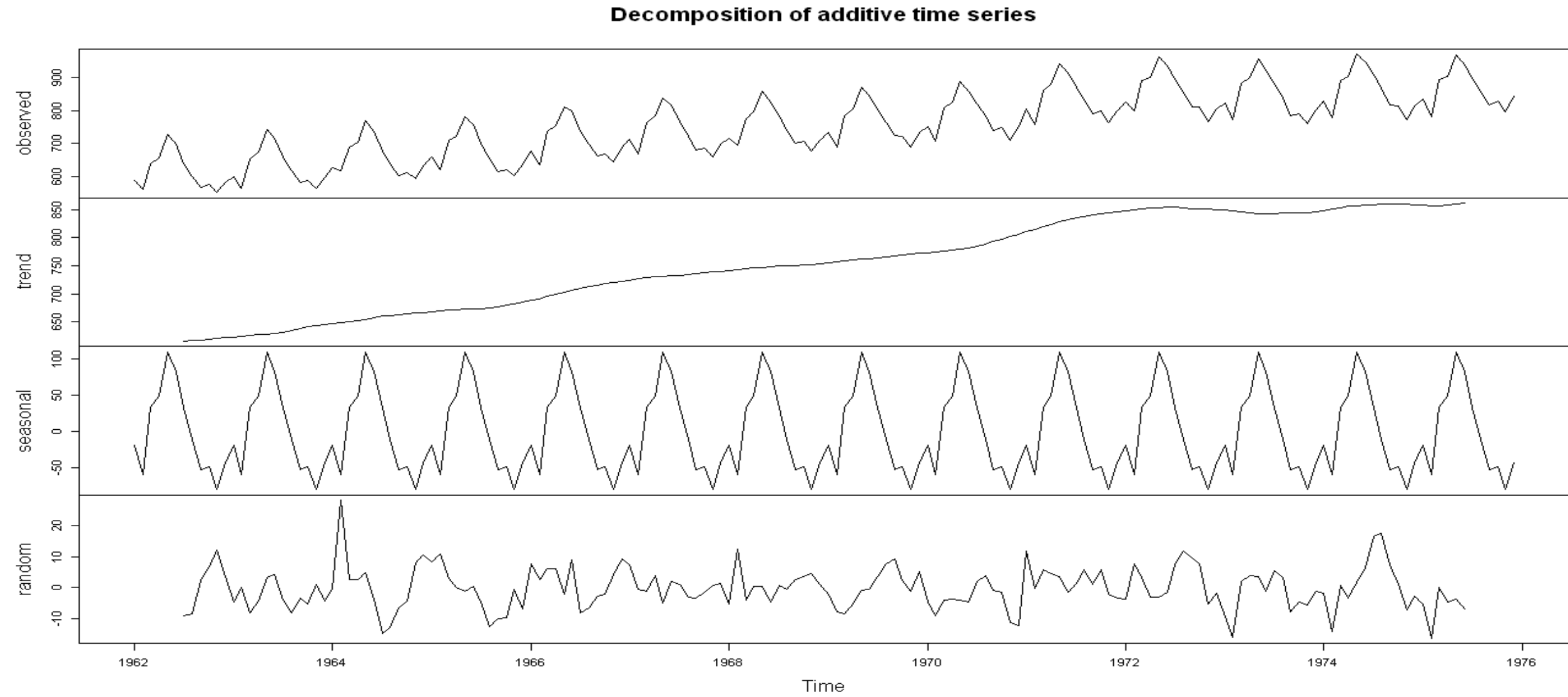
```
install.packages("plotly")  
install.packages("rattle")  
install.packages("RColorBrewer")  
library(plotly)  
library(rattle)  
library(RColorBrewer)  
x = read.csv("milk.csv", sep=",", stringsAsFactors=FALSE, header=T)  
x<-x[-169,]  
birthstimeseries<-ts(x$Monthly.milk.production..pounds.per.cow..Jan.62...Dec.75,  
frequency=12, start=c(1962,1))  
plot.ts(birthstimeseries, main="Produção Mensal de Leite", ylab="Libras por Vaca  
(lb/vaca)", xlab="Anos")
```

## Produção Mensal de Leite



**Figura 1: Produção mensal de leite (em libras) por vaca entre 1962 e 1976. Fonte: Elaborada pelo autor (2 017).**

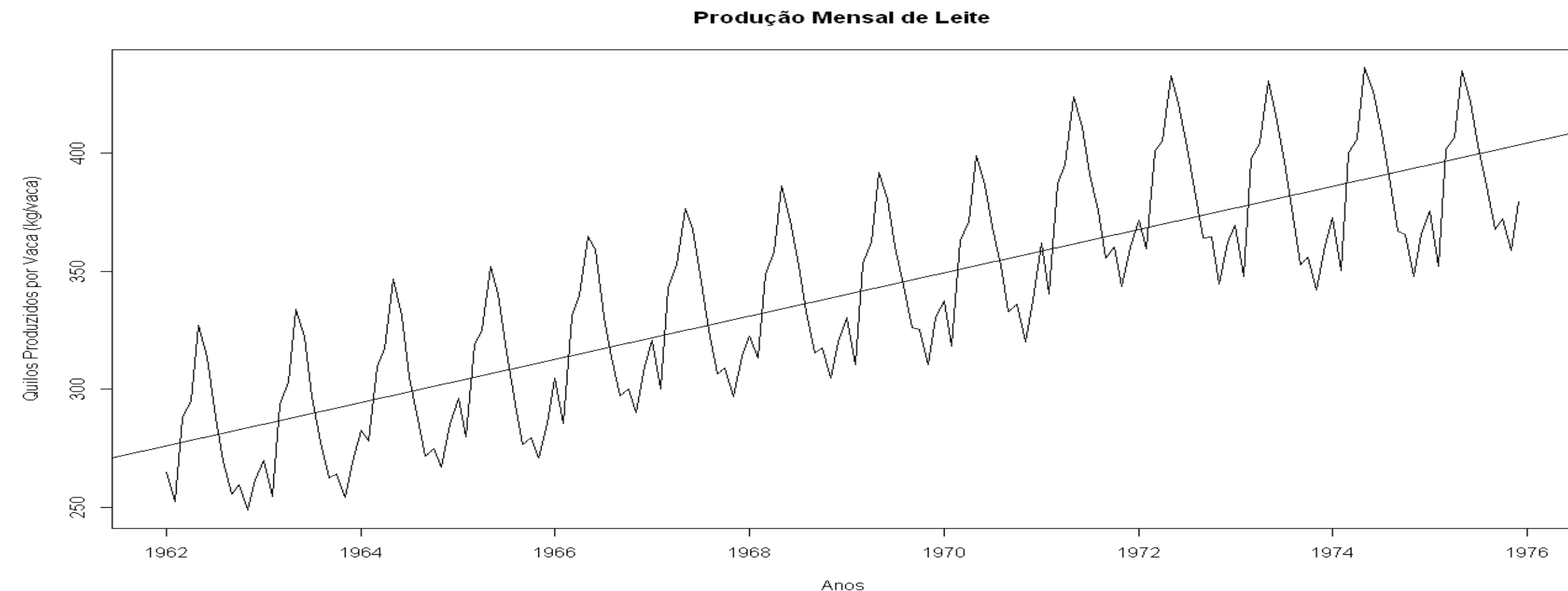
```
birthstimeseriescomponents <- decompose(birthstimeseries)
plot(birthstimeseriescomponents)
```



**Figura 2: Gráficos de dados observados, tendência, componente temporal e resíduos. Fonte: Elaborada pelo autor (2 017).**



```
for(i in 1:nrow(x)){  x[i,2] = (x[i,2])*0.45}
birthstimeseries <- ts(x$Monthly.milk.production..pounds.per.cow..Jan.62...Dec.75,
frequency=12, start=c(1962,1))
plot.ts(birthstimeseries,main="Produção Mensal de Leite", ylab="Quilos Produzidos por
Vaca (kg/vaca)",xlab="Anos")
abline(reg=lm(birthstimeseries~time(birthstimeseries)))
```



**Figura 3: Produção mensal de leite (em quilos) por vaca entre 1962 e 1976. Fonte: Elaborada pelo autor (2 017).**

`boxplot(birthstimeseries~cycle(birthstimeseries))`

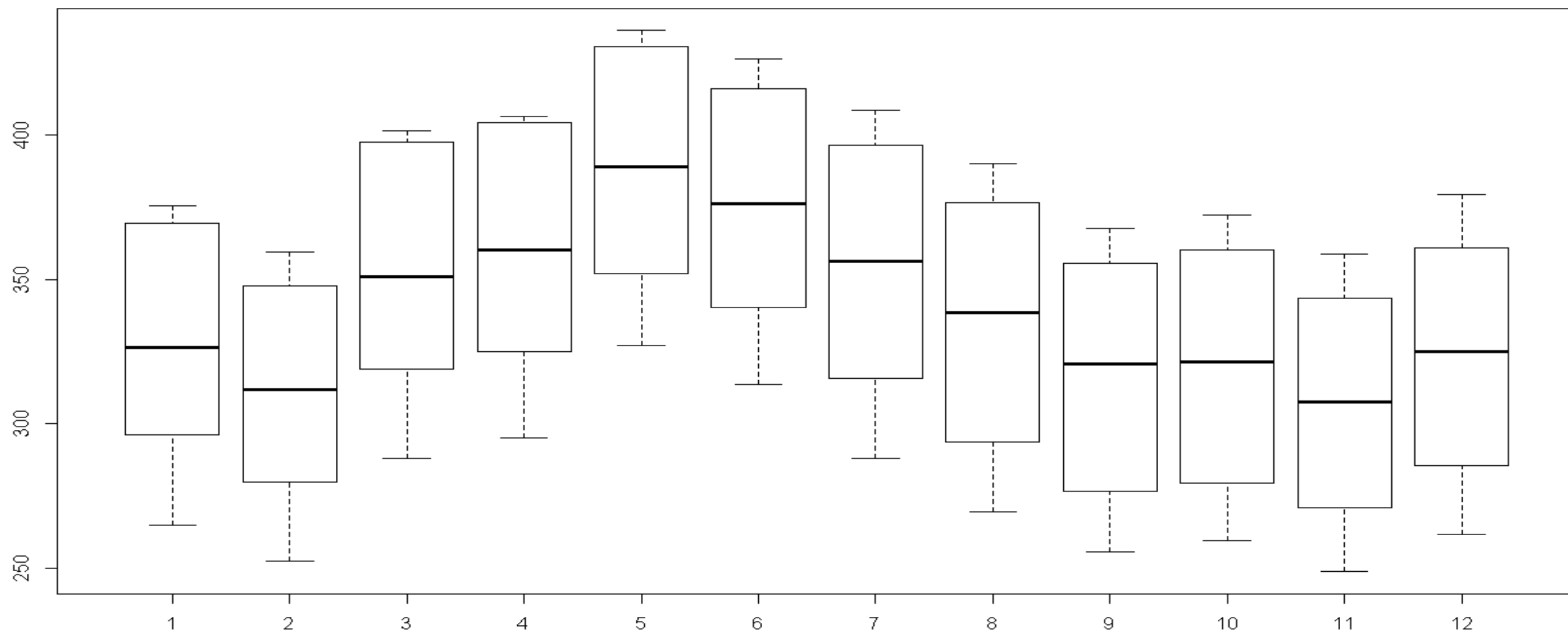
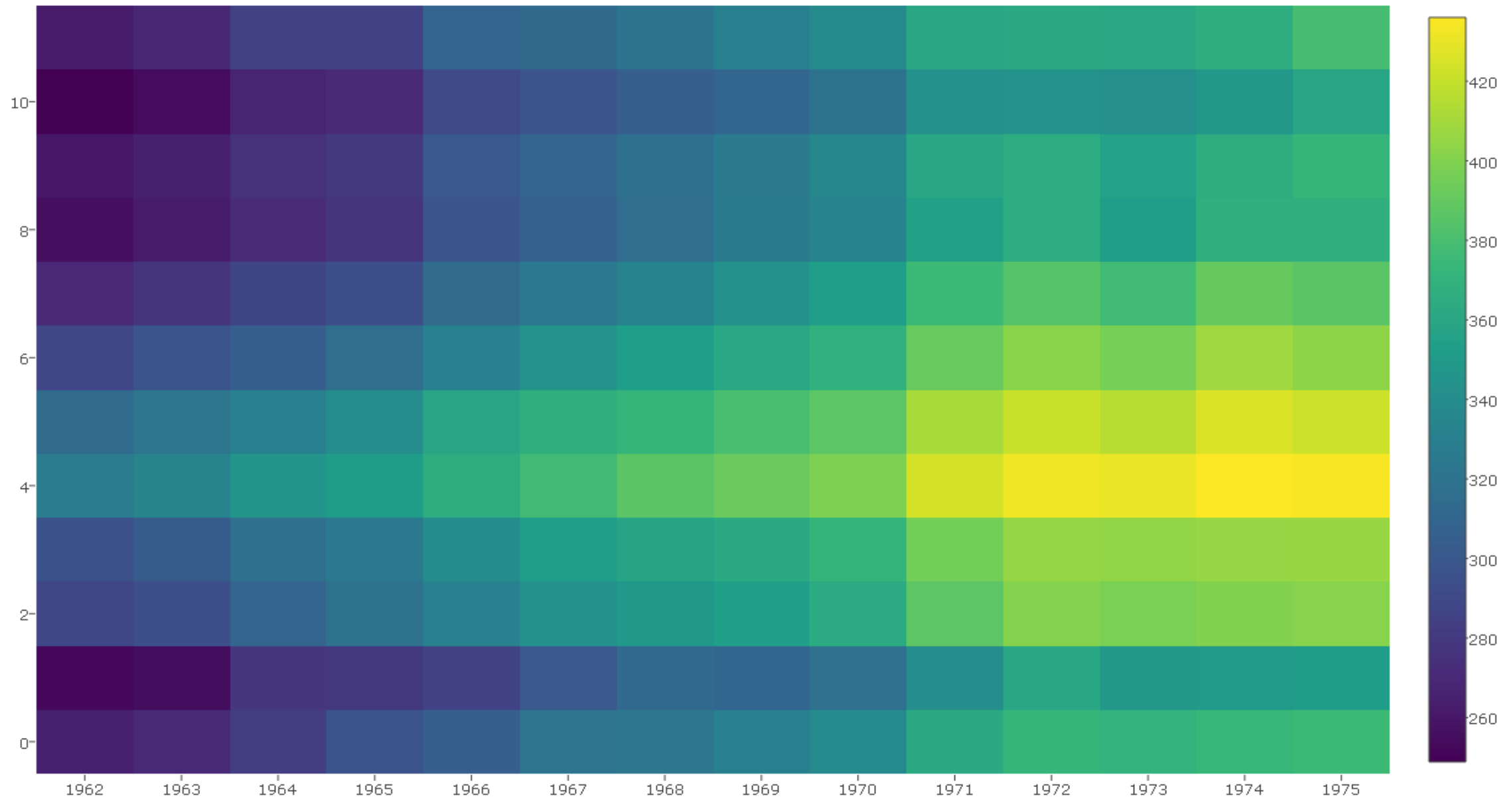


Figura 4: Gráfico de caixa da produção de leite por mês. Fonte: Elaborada pelo autor (2 017).





**Figura 5: Mapa de calor da produção mensal de leite (em quilos) por vaca entre 1962 e 1976. Fonte: Elaborada pelo autor (2 017).**



**Figura 6: Mapa de calor da produção mensal de leite (em quilos) por vaca entre 1962 e 1976. Fonte: Elaborada pelo autor (2 017).**

```

clock.plot <- function (x, col = rainbow(n), ...) {
  if( min(x)<0 ) x <- x - min(x)
  if( max(x)>1 ) x <- x/max(x)
  n <- length(x)
  if(is.null(names(x))) names(x) <-
c(1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12)
  m <- 1.05
  plot(0, type = 'n', xlim = c(-m,m), ylim = c(-m,m), axes = F, xlab = '', ylab = '', ...)  a <-
pi/2 - 2*pi/200*0:200
  polygon( cos(a), sin(a) )    v <- .02    a <- pi/2 - 2*pi/n*0:n
  segments( (1+v)*cos(a), (1+v)*sin(a), (1-v)*cos(a), (1-v)*sin(a) )
  segments( cos(a), sin(a),0, 0, col = 'light grey', lty = 3)
  ca <- -2*pi/n*(0:50)/50
  for (i in 1:n) {
    nn<-i
    a <- pi/2 - 2*pi/n*(i-1)
    b <- pi/2 - 2*pi/n*i
    nn<-nn%%12
    polygon( c(0, x[i]*cos(a+ca), 0), c(0, x[i]*sin(a+ca), 0), col=col[i] )
    v <- .1
    text((1+v)*cos(a), (1+v)*sin(a), names(x)[i])    }}
  clock.plot(m, main = "Produção de Leite por Mês por Vaca (Kg)")

```

### Produção de Leite por Mês por Vaca (Kg)

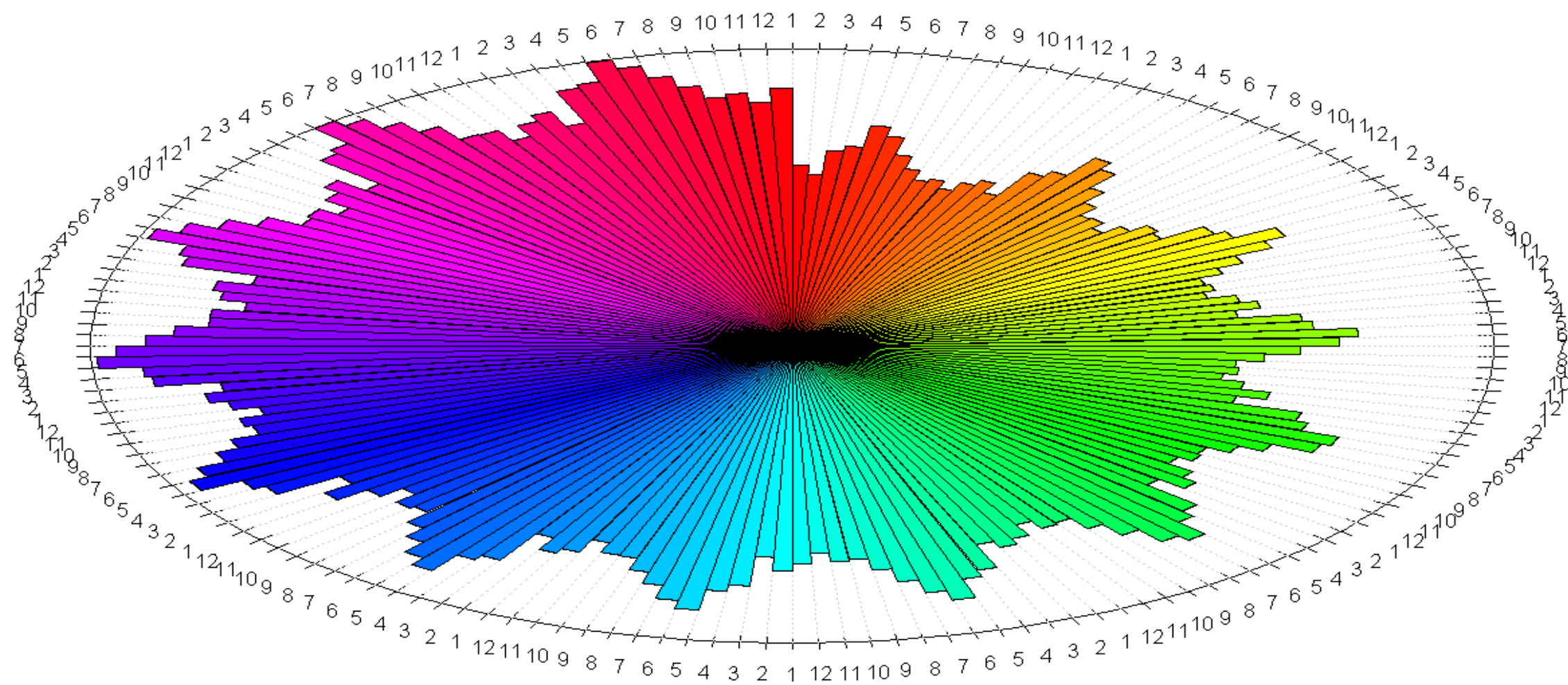


Figura 7: Gráfico polar da produção mensal de leite (em quilos) por vaca entre 1962 e 1976. Fonte: Elaborada pelo autor (2 017).

```

clock.plot <- function (x, col = rainbow(n), ...) {
  if( min(x)<0 ) x <- x - min(x)
  if( max(x)>1 ) x <- x/max(x)
  n <- length(x)
  if(is.null(names(x))) names(x) <- c(1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12,1:12)
      qq <- c(1962,1963,1964,1965,1966,1967,1968,1969,1970,1971,1972,1973,1974,1975)      m <- 1.05
  plot(0, type = 'n', xlim = c(-m,m), ylim = c(-m,m), axes = F, xlab = '', ylab = '', ...)      a <- pi/2 -
  2*pi/200*0:200
  polygon( cos(a), sin(a) )
  v <- .02
  a <- pi/2 - 2*pi/n*0:n
  segments( (1+v)*cos(a), (1+v)*sin(a), (1-v)*cos(a), (1-v)*sin(a) )
  segments( cos(a), sin(a),0, 0, col = 'light grey', lty = 3)
  ca <- -2*pi/n*(0:50)/50
  j0<-1
  j1<-1
  for (i in 1:n) {
    nn<-i
    a <- pi/2 - 2*pi/n*(i-1)
    b <- pi/2 - 2*pi/n*i
    nn<-nn%%12
    if(nn==0){j1<-j1+11}
    polygon( c(0, x[i]*cos(a+ca), 0), c(0, x[i]*sin(a+ca), 0), col=col[j1] )
    v <- .1
    text((0.95+v)*cos(a), (0.95+v)*sin(a), names(x)[i])
    if(nn==6){
      text((1.01+v)*cos(a), (1.01+v)*sin(a),
qq[j0]) j0=j0+1} }}
  clock.plot(m, main = "Produção de Leite por Mês por Vaca")

```



## Produção de Leite por Mês por Vaca

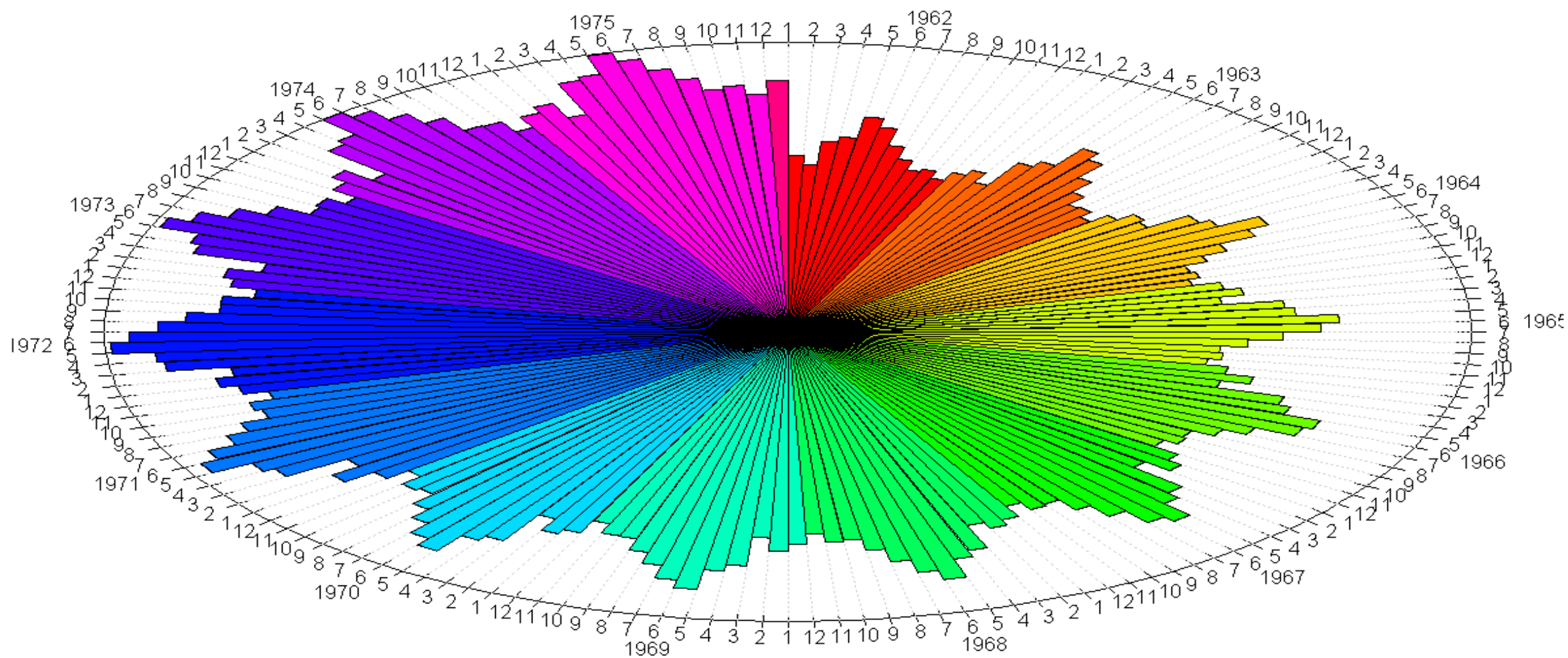


Figura 8: Gráfico polar da produção mensal de leite (em quilos) por vaca entre 1962 e 1976. Fonte: Elaborada pelo autor (2 017).

- Cryer (1986). Monthly milk production: pounds per cow. Jan 62 – Dec 75, adjusted for month length.
- DataMarket. Monthly milk production: pounds per cow. Jan 62 – Dec 75, adjusted for month length. Disponível em: <<https://datamarket.com/data/set/22sn/monthly-milk-production-pounds-per-cow-jan-62-dec-75-adjusted-for-month-length#!ds=22sn&display=line>>. Acesso em: 07/11/2017.
- Zoonekynd, V. From Data to Graphics. 2007. Disponível em: <[http://zoonek2.free.fr/UNIX/48\\_R/03.html](http://zoonek2.free.fr/UNIX/48_R/03.html)>. Acesso em: 10/11/2017.
- Plotly R Library. Disponível em: <<https://plot.ly/r/>> . Acesso em: 10/11/2017.
- RDocumentation. Disponível em: <<https://www.rdocumentation.org/>>. Acesso em: 02/10/2017.

# Referências Bibliográficas