Trabajo fin de master

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Base de datos

Base de datos con los años 2013, 2014 y 2015 con las capturas de Thanasimus formicarius y las capturas de los escolítidos de interés.

Tabla descriptiva de los datos:

```
## DatosModelo
##
##  26  Variables      525  Observations
## ---------------------------------------------------------------------------
## Plot
##        n  missing distinct
##      525        0       15
##
## Value          1     2     3     4     5     6     7     8     9    10    11
## Frequency     35    35    35    35    35    35    35    35    35    35    35
## Proportion 0.067 0.067 0.067 0.067 0.067 0.067 0.067 0.067 0.067 0.067 0.067
##
## Value         12    13    14    16
## Frequency     35    35    35    35
## Proportion 0.067 0.067 0.067 0.067
## ---------------------------------------------------------------------------
## Periodo
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       35    0.999       18    11.68        2        4
##      .25      .50      .75      .90      .95
##        9       18       27       32       34
##
## lowest :  1  2  3  4  5, highest: 31 32 33 34 35
## ---------------------------------------------------------------------------
## Month
##        n  missing distinct
##      525        0       12
##
## Value          1    10    11    12     2     3     4     5     6     7     8
## Frequency     45    45    45    30    45    45    45    45    45    45    45
## Proportion 0.086 0.086 0.086 0.057 0.086 0.086 0.086 0.086 0.086 0.086 0.086
##
## Value          9
## Frequency     45
## Proportion 0.086
## ---------------------------------------------------------------------------
## Year
```

```
##        n  missing distinct
##      525        0        3
##
## Value       2013  2014  2015
## Frequency    180   180   165
## Proportion 0.343 0.343 0.314
## ---------------------------------------------------------------------------
## Codigo
##        n  missing distinct
##      525        0       15
##
## 10Penyagolps (35, 0.067), 11Penyagolpn (35, 0.067), 12Penyagolpp (35, 0.067),
## 13Aitana (35, 0.067), 14Jérica (35, 0.067), 16Morella (35, 0.067), 1Guardamar
## (35, 0.067), 2Crevillent (35, 0.067), 3Biar (35, 0.067), 4Agres (35, 0.067),
## 5Saler (35, 0.067), 6PSMps (35, 0.067), 7PSMpn (35, 0.067), 8Sinarcas (35,
## 0.067), 9Poblatornesa (35, 0.067)
## ---------------------------------------------------------------------------
## Captures
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       81    0.881    13.69    22.29      0.0      0.0
##      .25      .50      .75      .90      .95
##      0.0      1.0     11.0     45.0     73.4
##
## lowest :   0   1   2   3   4, highest: 154 162 179 186 191
## ---------------------------------------------------------------------------
## Provincia
##        n  missing distinct
##      525        0        3
##
## Value       Alicante Castellón  Valencia
## Frequency        175       210       140
## Proportion     0.333     0.400     0.267
## ---------------------------------------------------------------------------
## Comarca
##        n  missing distinct
##      525        0       12
##
## lowest : El Alto Palancia              El Baix Segura / La Vega Baja El Baix Vinalopò              El
## highest: La Marina Baixa               La Plana Alta                 La Plana Utiel - Requena      Ri
## ---------------------------------------------------------------------------
## TM
##        n  missing distinct
##      525        0       12
##
## lowest : Agres                   Biar                    Confrides               Crevillent
## highest: Pobla Tornesa           Puebla de San Miguel    Saler                   Sinarcas
## ---------------------------------------------------------------------------
## AltMin
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       14    0.994    812.9    585.2        0        3
##      .25      .50      .75      .90      .95
##      300      900     1280     1400     1650
##
## Value         0.0  165.0  297.0  478.5  610.5  825.0  891.0 1089.0 1188.0
```

```
## Frequency      70     35     35     35     35     35     70     35     35
## Proportion  0.133  0.067  0.067  0.067  0.067  0.067  0.133  0.067  0.067
##
## Value      1270.5 1336.5 1386.0 1650.0
## Frequency      35     35     35     35
## Proportion  0.067  0.067  0.067  0.067
##
## For the frequency table, variable is rounded to the nearest 16.5
## ----------------------------------------------------------------------------
## AltMax
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       14    0.994     1026    638.9       10       35
##      .25      .50      .75      .90      .95
##      500     1200     1510     1700     1836
##
## Value        10.00   28.26  393.46  484.76  667.36  904.74 1087.34 1196.90
## Frequency       35      35      35      35      35      35      35      35
## Proportion   0.067   0.067   0.067   0.067   0.067   0.067   0.067   0.067
##
## Value      1233.42 1470.80 1507.32 1543.84 1689.92 1836.00
## Frequency       70      35      35      35      35      35
## Proportion   0.133   0.067   0.067   0.067   0.067   0.067
##
## For the frequency table, variable is rounded to the nearest 18.26
## ----------------------------------------------------------------------------
## Superf
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       15    0.996      342    271.4    33.64    35.78
##      .25      .50      .75      .90      .95
##    81.83   358.11   522.32   702.70   745.70
##
## Value       33.6400  55.0018  76.3636 104.8460 211.6550 275.7404 354.0670
## Frequency        70       35       35       35       35       35       35
## Proportion    0.133    0.067    0.067    0.067    0.067    0.067    0.067
##
## Value      411.0318 475.1172 510.7202 517.8408 574.8056 695.8558 745.7000
## Frequency        35       35       35       35       35       35       35
## Proportion    0.067    0.067    0.067    0.067    0.067    0.067    0.067
##
## For the frequency table, variable is rounded to the nearest 7.1206
## ----------------------------------------------------------------------------
## CoordX
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       15    0.996   675902    84611   247400   653710
##      .25      .50      .75      .90      .95
##   661762   710475   729695   737989   741803
##
## Value      247400.0 652810.5 657754.5 692362.7 697306.7 702250.8 707194.8
## Frequency        35       35       70       35       35       35       35
## Proportion    0.067    0.067    0.133    0.067    0.067    0.067    0.067
##
## Value      712138.8 722026.9 726970.9 736859.0 741803.0
## Frequency        35       70       70       35       35
## Proportion    0.067    0.133    0.133    0.067    0.067
```

```
##
## For the frequency table, variable is rounded to the nearest 4944.03
## ---------------------------------------------------------------------------
## CoordY
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       15    0.996  4379218    97937  4219823  4239891
##      .25      .50      .75      .90      .95
##  4281927  4416944  4457593  4469449  4490223
##
## Value      4219823 4238751 4279311 4292831 4357727 4403695 4414511 4430735
## Frequency       35      35      70      35      35      35      35      35
## Proportion   0.067   0.067   0.133   0.067   0.067   0.067   0.067   0.067
##
## Value      4436143 4441551 4455071 4457775 4468591 4490223
## Frequency       35      35      35      35      35      35
## Proportion   0.067   0.067   0.067   0.067   0.067   0.067
##
## For the frequency table, variable is rounded to the nearest 2704
## ---------------------------------------------------------------------------
## TMinMed
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      475        1    9.272    6.922    0.198    1.496
##      .25      .50      .75      .90      .95
##    4.370    9.060   13.780   17.456   19.338
##
## lowest : -3.37 -2.96 -1.96 -1.88 -1.78, highest: 22.48 22.98 23.38 23.55 23.79
## ---------------------------------------------------------------------------
## TMaxMed
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      470        1    19.72    8.305    8.404    9.784
##      .25      .50      .75      .90      .95
##   14.080   19.940   25.430   29.392   31.024
##
## lowest : 2.15  2.85  4.86  4.88  5.03 , highest: 33.44 33.75 33.77 34.89 35.86
## ---------------------------------------------------------------------------
## Precipita
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      269        1    1.502    1.554    0.110    0.174
##      .25      .50      .75      .90      .95
##    0.410    0.960    2.030    3.682    4.596
##
## lowest : 0     0.01  0.02  0.03  0.04 , highest: 9.04  9.62  9.92  10.56 11.68
## ---------------------------------------------------------------------------
## Hylastesater
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       47    0.723    7.949    14.66      0.0      0.0
##      .25      .50      .75      .90      .95
##      0.0      0.0      2.0     12.0     27.6
##
## lowest :   0   1   2   3   4, highest: 128 320 461 484 571
## ---------------------------------------------------------------------------
## Hylastesattenuatus
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       68    0.558    19.01    36.06      0.0      0.0
```

```
##      .25      .50      .75      .90      .95
##      0.0      0.0      0.0     20.2     99.8
##
## lowest :    0    1    2    3    4, highest:  414  516  551  878 1558
## ------------------------------------------------------------------------------
## Hylurgusmiklitzi
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      112    0.905    34.18    59.04      0.0      0.0
##      .25      .50      .75      .90      .95
##      0.0      1.0     19.0     84.6    160.6
##
## lowest :    0    1    2    3    4, highest:  558  562  961 1134 1420
## ------------------------------------------------------------------------------
## Ipssexdentatus
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       97    0.718    41.19     76.1      0.0      0.0
##      .25      .50      .75      .90      .95
##      0.0      0.0      3.0     85.4    233.0
##
## lowest :    0    1    2    3    4, highest:  963 1053 1080 1653 1665
## ------------------------------------------------------------------------------
## Tomicusdestruens
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       22    0.345   0.9829    1.888      0.0      0.0
##      .25      .50      .75      .90      .95
##      0.0      0.0      0.0      1.0      3.8
##
## lowest :  0  1  2  3  4, highest: 20 23 53 72 93
## ------------------------------------------------------------------------------
## Suma
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      334        1    285.6    363.6      4.0     14.0
##      .25      .50      .75      .90      .95
##     41.0    125.0    350.0    695.6    993.8
##
## lowest :    0    1    2    4    5, highest: 2052 3422 3597 4297 5397
## ------------------------------------------------------------------------------
## AltMed
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0       15    0.996    919.5    606.2        5       19
##      .25      .50      .75      .90      .95
##      400      995     1415     1550     1743
##
## Value         5.00  265.70  387.36  578.54  891.38  926.14  978.28 1013.04
## Frequency       70      35      35      35      35      35      35      35
## Proportion   0.133   0.067   0.067   0.067   0.067   0.067   0.067   0.067
##
## Value      1169.46 1325.88 1412.78 1534.44 1743.00
## Frequency       35      35      70      35      35
## Proportion   0.067   0.067   0.133   0.067   0.067
##
## For the frequency table, variable is rounded to the nearest 17.38
## ------------------------------------------------------------------------------
## SumaEspecies
```

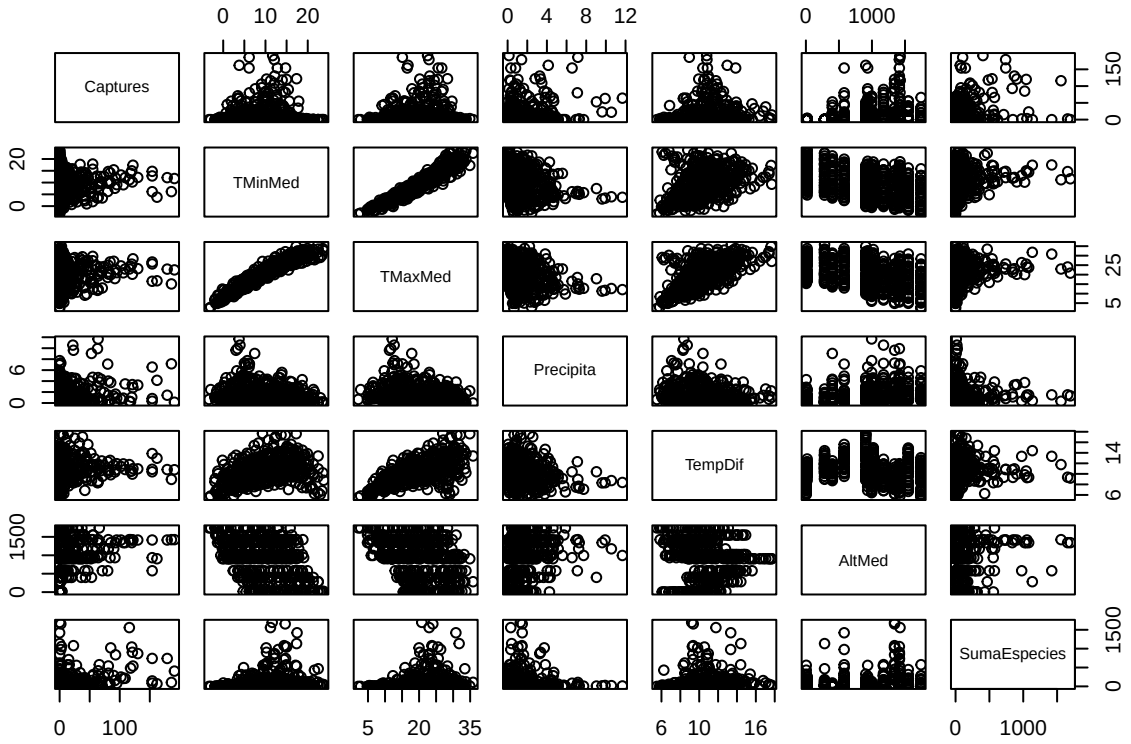
```
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      198    0.996    103.3    158.7      0.0      0.0
##      .25      .50      .75      .90      .95
##      2.0     20.0    105.0    282.6    530.8
##
## lowest :    0    1    2    3    4, highest: 1134 1421 1558 1656 1696
## ------------------------------------------------------------------------------
## TempDif
##        n  missing distinct     Info     Mean      Gmd      .05      .10
##      525        0      449        1    10.45    2.489    7.012    7.564
##      .25      .50      .75      .90      .95
##    9.050   10.320   11.770   13.522   14.232
##
## lowest : 5.52  5.81  5.86  6.01  6.08 , highest: 17.04 17.38 17.4  17.62 17.68
## ------------------------------------------------------------------------------
```

Correlaciones entre nuestras variables:

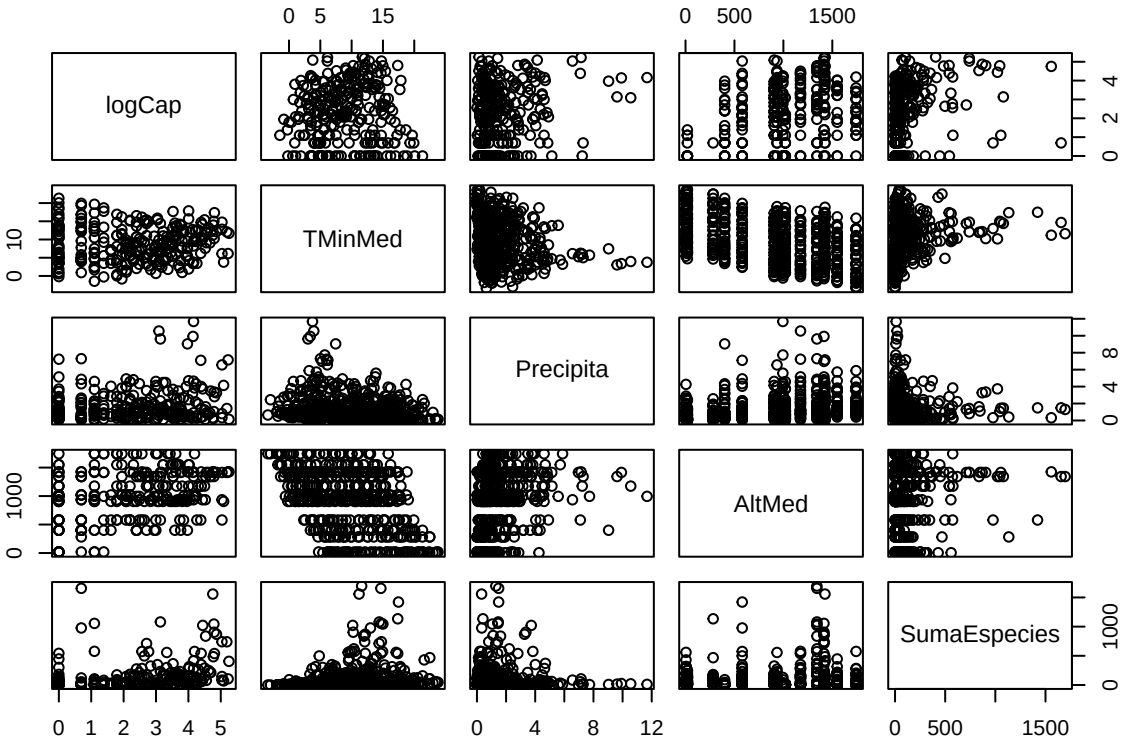
```
round(cor(DatosModelo[,c(6,15,16,17,26,24,25)]),2)
```

```
##              Captures TMinMed TMaxMed Precipita TempDif AltMed SumaEspecies
## Captures         1.00    0.03    0.07      0.20    0.14   0.22         0.35
## TMinMed          0.03    1.00    0.96     -0.16    0.40  -0.42         0.23
## TMaxMed          0.07    0.96    1.00     -0.21    0.65  -0.40         0.23
## Precipita        0.20   -0.16   -0.21      1.00   -0.22   0.23        -0.05
## TempDif          0.14    0.40    0.65     -0.22    1.00  -0.14         0.11
## AltMed           0.22   -0.42   -0.40      0.23   -0.14   1.00         0.10
## SumaEspecies     0.35    0.23    0.23     -0.05    0.11   0.10         1.00
```

```
pairs(DatosModelo[,c(6,15,16,17,26,24,25)])
```

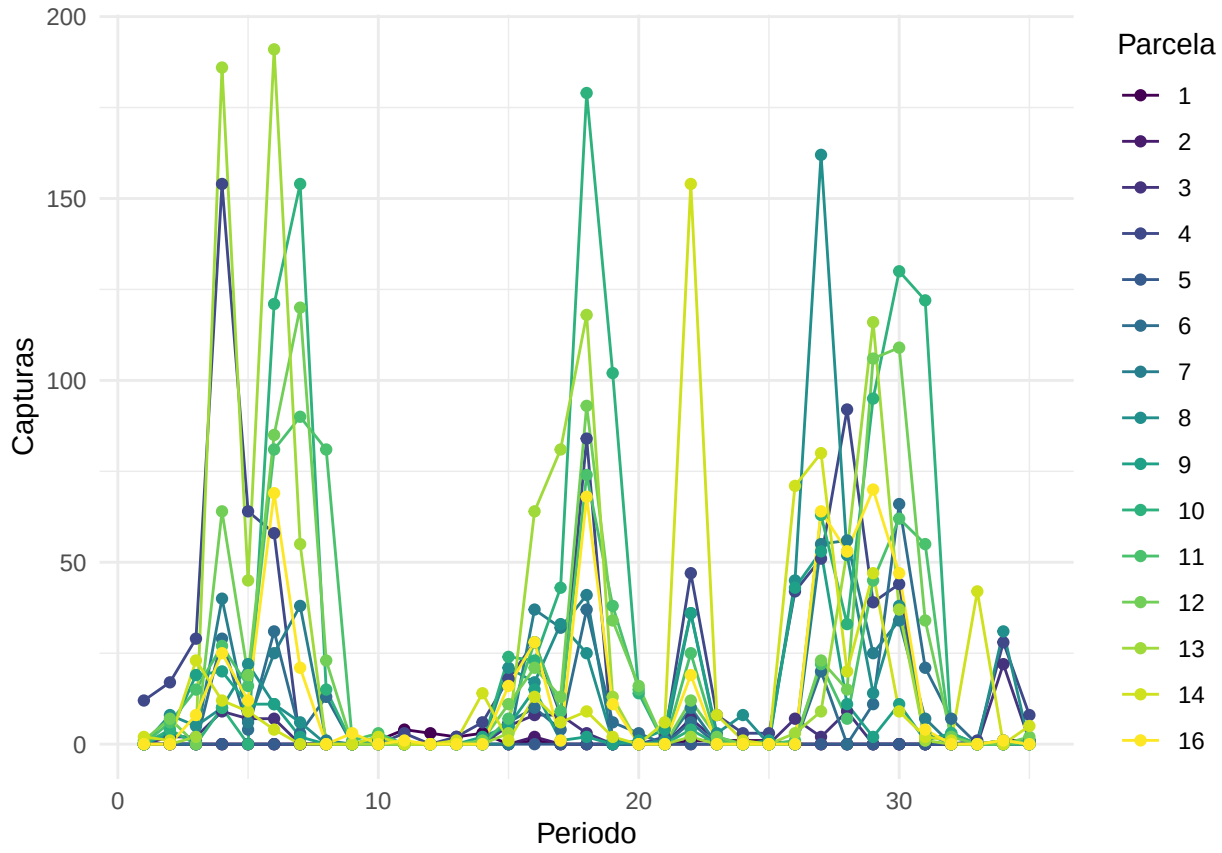



```
DatosModelo$logCap <- log(DatosModelo$Captures)
pairs(DatosModelo[,c(27,15,17,24,25)])
```



Serie temporal de las capturas de nuestra especie de interés:

```
ggplot(DatosModelo, aes(x = Periodo, y = Captures, color = as.factor(Plot))) +
  geom_line() +
  geom_point() +
  labs(x = "Periodo", y = "Capturas", color = "Parcela") +
  theme_minimal()
```



Modelos

```
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + v[i] + g[j]
     }
     v[i] ~ dnorm(0,tauv)
   }
   g[1] ~ dnorm(0,taug)
   for (j in 2:35){
    g[j] ~  dnorm(g[j-1],taug)
   }
   taug <- 1/pow(sdg,2)
   sdg ~ dunif(0,10)
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
```

```
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures, nrow = 14))

#Iniciales
Iniciales <- function(){
  list(beta0 = rnorm(1), v =rnorm(14), g = rnorm(35),
       sdg = runif(1,0,6), sdv = runif(1,0,3))
}

#Parámetros
Param <- c("beta0", "v", "sdv", "g", "sdg")
```

```
ResulNulo
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/Rtmp8mEBAr/model48446a132d.txt", fit
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##             mean   sd    2.5%     25%     50%     75%   97.5% Rhat n.eff
## beta0       -0.3  0.8    -1.6    -0.9    -0.4     0.2     1.2  1.7     6
## v[1]         0.2  0.1    -0.1     0.1     0.1     0.2     0.4  1.0   250
## v[2]         0.0  0.1    -0.2    -0.1     0.0     0.1     0.2  1.0   210
## v[3]        -0.4  0.1    -0.6    -0.5    -0.4    -0.3    -0.2  1.0   230
## v[4]         0.0  0.1    -0.2     0.0     0.0     0.1     0.3  1.0   200
## v[5]        -0.4  0.1    -0.6    -0.4    -0.4    -0.3    -0.1  1.0   200
## v[6]         0.2  0.1     0.0     0.1     0.2     0.3     0.4  1.0   250
## v[7]         0.2  0.1     0.0     0.1     0.2     0.2     0.4  1.0   250
## v[8]         0.3  0.1     0.0     0.2     0.3     0.3     0.5  1.0   190
## v[9]         0.0  0.1    -0.2    -0.1     0.0     0.1     0.2  1.0   220
## v[10]       -0.5  0.1    -0.7    -0.6    -0.5    -0.4    -0.3  1.0   290
## v[11]        0.6  0.1     0.3     0.5     0.6     0.6     0.8  1.0   170
## v[12]       -0.3  0.1    -0.6    -0.4    -0.3    -0.3    -0.1  1.0   180
## v[13]        0.5  0.1     0.3     0.5     0.5     0.6     0.8  1.0   280
## v[14]       -0.3  0.1    -0.5    -0.3    -0.3    -0.2     0.0  1.0   240
## sdv          0.4  0.1     0.3     0.3     0.4     0.4     0.6  1.0  1000
## g[1]         0.0  0.7    -1.4    -0.5     0.1     0.6     1.3  1.6     7
## g[2]        -0.9  0.9    -2.6    -1.5    -0.8    -0.2     0.6  1.5     8
## g[3]        -1.6  0.9    -3.5    -2.3    -1.6    -0.9     0.1  1.4     8
## g[4]        -1.8  0.9    -3.7    -2.4    -1.7    -1.1     0.0  1.4     8
## g[5]        -1.8  0.9    -3.7    -2.4    -1.7    -1.1     0.0  1.3    10
## g[6]         0.9  0.8    -0.6     0.3     0.9     1.4     2.2  1.6     6
## g[7]         1.5  0.8     0.0     1.0     1.6     2.1     2.8  1.7     6
## g[8]         3.5  0.7     2.0     2.9     3.5     4.0     4.8  1.7     6
## g[9]         2.6  0.8     1.1     2.1     2.7     3.2     3.9  1.7     6
## g[10]        3.5  0.7     2.0     3.0     3.6     4.1     4.8  1.7     6
## g[11]        2.0  0.8     0.5     1.5     2.0     2.6     3.3  1.6     7
## g[12]        2.1  0.7     0.6     1.6     2.2     2.7     3.4  1.7     7
## g[13]        3.0  0.8     1.5     2.4     3.0     3.6     4.2  1.7     6
## g[14]        2.3  0.7     0.8     1.8     2.4     2.9     3.6  1.7     6
## g[15]        2.8  0.8     1.3     2.3     2.9     3.4     4.1  1.7     6
## g[16]        1.8  0.8     0.3     1.2     1.8     2.3     3.1  1.7     6
## g[17]        3.6  0.7     2.1     3.1     3.6     4.2     4.9  1.7     6
```

```
## g[18]        2.6  0.8     1.1     2.1     2.7     3.2     3.9  1.7     6
## g[19]        1.1  0.8    -0.4     0.6     1.2     1.7     2.4  1.7     6
## g[20]        2.7  0.8     1.2     2.2     2.7     3.3     4.0  1.7     6
## g[21]        3.3  0.7     1.8     2.8     3.4     3.9     4.6  1.7     6
## g[22]        3.8  0.7     2.3     3.3     3.8     4.4     5.0  1.7     6
## g[23]        4.0  0.7     2.5     3.4     4.0     4.5     5.3  1.7     6
## g[24]        3.1  0.7     1.7     2.6     3.2     3.7     4.4  1.7     6
## g[25]        3.0  0.8     1.5     2.5     3.0     3.6     4.3  1.7     6
## g[26]        3.4  0.8     1.9     2.8     3.4     3.9     4.6  1.7     6
## g[27]        3.1  0.7     1.6     2.6     3.1     3.6     4.3  1.7     6
## g[28]        4.2  0.7     2.7     3.7     4.2     4.8     5.5  1.7     6
## g[29]        3.2  0.8     1.7     2.7     3.3     3.8     4.5  1.7     6
## g[30]        3.0  0.8     1.5     2.5     3.0     3.6     4.3  1.7     6
## g[31]        1.8  0.8     0.3     1.3     1.9     2.4     3.2  1.7     6
## g[32]        3.5  0.8     2.0     3.0     3.6     4.1     4.8  1.7     6
## g[33]        3.1  0.7     1.6     2.6     3.1     3.7     4.3  1.7     6
## g[34]        2.5  0.8     0.9     1.9     2.5     3.0     3.7  1.7     6
## g[35]        3.1  0.7     1.7     2.6     3.2     3.7     4.4  1.7     6
## sdg          1.1  0.2     0.9     1.0     1.1     1.2     1.5  1.0  1000
## deviance 14030.7 10.0 14010.0 14020.0 14030.0 14040.0 14050.0  1.0  1000
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 46.4 and DIC = 14077.0
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```
#Rhat
summary((ResulNulo$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   1.010   1.680   1.457   1.717   1.733
```

El modelo no converge.

```
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + beta1*TMin[i,j] + beta2*Precipita[i,j] +
          beta3*AltMed[i,j] + beta4*Especies[i,j] + beta5*TDif[i,j] + v[i] + g[j]
     }
     v[i] ~ dnorm(0,tauv)
   }
   g[1] ~ dnorm(0,taug)
   for (j in 2:35){
    g[j] ~  dnorm(g[j-1],taug)
   }
   taug <- 1/pow(sdg,2)
   sdg ~ dunif(0,10)
```

```
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
   beta1 ~ dflat()
   beta2 ~ dflat()
   beta3 ~ dflat()
   beta4 ~ dflat()
   beta5 ~ dflat()
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures, nrow = 14),
              TMin = matrix(DatosModeloSIN5$TMinMed, nrow = 14),
              Precipita = matrix(DatosModeloSIN5$Precipita, nrow = 14),
              AltMed = matrix(scale(DatosModeloSIN5$AltMed), nrow = 14),
              Especies = matrix(scale(DatosModeloSIN5$SumaEspecies), nrow = 14),
              TDif = matrix(scale(DatosModeloSIN5$TempDif), nrow = 14))

#Iniciales
Iniciales <- function(){
  list(beta0 = rnorm(1), v =rnorm(14), sdv = runif(1,0,3), g = rnorm(35), sdg = runif(1,0,6), beta1 = r
}

#Parámetros
Param <- c("beta0","beta1","beta2","beta3","beta4", "v", "sdv", "g", "sdg")
```

```
Resul1
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/RtmpaI8gjv/model6ac6f9d67f8.txt", fit
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##             mean   sd    2.5%     25%     50%     75%   97.5% Rhat n.eff
## beta0       -0.5  2.7    -7.5    -1.6     0.7     1.4     2.3  1.4     9
## beta1        0.0  0.0     0.0     0.0     0.0     0.0     0.0  1.0  1000
## beta2        0.1  0.0     0.1     0.1     0.1     0.2     0.2  1.0   400
## beta3        0.5  0.1     0.3     0.4     0.5     0.5     0.6  1.0    63
## beta4        0.4  0.0     0.3     0.3     0.4     0.4     0.4  1.0  1000
## v[1]         0.4  1.1    -0.2    -0.1     0.0     0.1     3.9  1.2    30
## v[2]         0.0  1.1    -0.6    -0.4    -0.4    -0.3     3.5  1.2    31
## v[3]         0.0  1.1    -0.6    -0.5    -0.4    -0.3     3.5  1.2    30
## v[4]        -0.1  1.1    -0.7    -0.5    -0.5    -0.3     3.4  1.2    30
## v[5]         0.2  1.1    -0.4    -0.2    -0.2    -0.1     3.7  1.2    31
## v[6]         0.6  1.1     0.0     0.1     0.2     0.3     4.1  1.2    31
## v[7]         0.5  1.1     0.0     0.1     0.2     0.3     4.1  1.2    30
## v[8]         0.4  1.1    -0.2    -0.1     0.0     0.1     3.9  1.2    30
## v[9]         0.3  1.1    -0.3    -0.2    -0.1     0.0     3.8  1.2    30
## v[10]        0.2  1.1    -0.4    -0.3    -0.2    -0.1     3.7  1.2    30
## v[11]        1.1  1.1     0.5     0.6     0.7     0.8     4.7  1.1    28
## v[12]        0.6  1.1     0.0     0.1     0.2     0.3     4.1  1.2    31
## v[13]        0.9  1.1     0.4     0.5     0.6     0.7     4.5  1.1    29
## v[14]        0.3  1.1    -0.3    -0.2    -0.1     0.0     3.9  1.2    30
```

```
## sdv          0.8  1.1     0.3     0.3     0.4     0.5     4.4  1.1    32
## g[1]         1.0  1.9    -1.3    -0.4     0.3     2.0     5.1  1.5     8
## g[2]         0.0  2.0    -2.5    -1.4    -0.6     1.1     4.3  1.5     8
## g[3]        -0.9  2.0    -3.7    -2.4    -1.5     0.3     3.2  1.5     8
## g[4]        -1.3  2.0    -4.3    -2.8    -1.8     0.0     3.0  1.5     8
## g[5]        -1.7  2.0    -4.4    -3.2    -2.2    -0.4     2.5  1.4     8
## g[6]         0.5  2.0    -1.9    -1.0    -0.2     1.7     4.8  1.5     7
## g[7]         1.1  2.0    -1.3    -0.4     0.4     2.3     5.4  1.5     8
## g[8]         3.0  2.0     0.6     1.5     2.2     4.1     7.2  1.7     6
## g[9]         2.4  2.0     0.0     0.8     1.6     3.5     6.5  1.5     8
## g[10]        3.4  2.0     1.1     1.9     2.7     4.5     7.6  1.7     6
## g[11]        1.6  2.1    -0.9     0.1     0.8     2.7     5.9  1.5     8
## g[12]        1.4  2.1    -1.0    -0.1     0.6     2.6     5.8  1.5     8
## g[13]        1.8  2.0    -0.6     0.3     1.1     2.9     6.1  1.5     7
## g[14]        1.0  2.0    -1.5    -0.6     0.2     2.1     5.2  1.5     8
## g[15]        1.6  2.0    -0.9     0.0     0.8     2.7     5.8  1.5     8
## g[16]        0.7  2.0    -1.7    -0.8     0.0     1.8     4.9  1.5     7
## g[17]        2.3  2.0    -0.1     0.7     1.5     3.4     6.5  1.5     8
## g[18]        1.6  2.0    -0.8     0.1     0.8     2.7     5.8  1.5     8
## g[19]        2.0  2.0    -0.3     0.5     1.3     3.1     6.2  1.5     8
## g[20]        3.3  2.0     1.0     1.8     2.6     4.5     7.5  1.7     6
## g[21]        2.9  2.0     0.5     1.3     2.1     3.9     7.1  1.5     7
## g[22]        3.5  2.0     1.1     1.9     2.7     4.6     7.7  1.7     6
## g[23]        3.3  2.0     0.9     1.8     2.5     4.4     7.6  1.7     6
## g[24]        2.8  2.0     0.4     1.3     2.0     3.9     7.0  1.5     8
## g[25]        2.7  2.0     0.4     1.2     2.0     3.9     7.0  1.5     8
## g[26]        2.6  2.0     0.2     1.0     1.8     3.7     6.8  1.5     7
## g[27]        2.7  2.0     0.3     1.2     2.0     3.8     7.0  1.5     7
## g[28]        3.6  2.0     1.2     2.1     2.8     4.7     7.9  1.6     6
## g[29]        3.2  2.0     0.8     1.6     2.4     4.4     7.4  1.7     6
## g[30]        2.3  2.0    -0.1     0.7     1.5     3.4     6.5  1.5     8
## g[31]        1.0  2.0    -1.4    -0.5     0.3     2.1     5.2  1.5     8
## g[32]        2.9  2.0     0.5     1.4     2.1     4.0     7.0  1.7     6
## g[33]        2.8  2.0     0.4     1.3     2.0     3.9     7.0  1.5     7
## g[34]        2.7  2.0     0.4     1.2     2.0     3.8     6.9  1.5     8
## g[35]        3.3  2.0     0.9     1.8     2.5     4.4     7.5  1.7     6
## sdg          1.1  0.2     0.8     0.9     1.0     1.2     1.5  1.1    42
## deviance 10558.3 10.6 10540.0 10550.0 10560.0 10560.0 10580.0  1.0  1000
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 50.1 and DIC = 10608.5
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```
#Rhat
summary((Resul1$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.9996  1.1637  1.5003  1.3829  1.5054  1.6817
```

El modelo no converge.

```r
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + beta1*TMin[i,j] + beta2*Precipita[i,j] +
          beta3*AltMed[i,j] + beta4*Especies[i,j] + beta5*TDif[i,j] + v[i]
     }
     v[i] ~ dnorm(0,tauv)
   }
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
   beta1 ~ dflat()
   beta2 ~ dflat()
   beta3 ~ dflat()
   beta4 ~ dflat()
   beta5 ~ dflat()
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures,
                                nrow = 14),
              TMin = matrix(DatosModeloSIN5$TMinMed,
                            nrow = 14),
              Precipita = matrix(DatosModeloSIN5$Precipita,
                                 nrow = 14),
              AltMed = matrix(scale(DatosModeloSIN5$AltMed),
                              nrow = 14),
              Especies = matrix(scale(DatosModeloSIN5$SumaEspecies),
                                nrow = 14),
              TDif = matrix(scale(DatosModeloSIN5$TempDif),
                            nrow = 14))

#Iniciales
Iniciales <- function(){
  list(beta0 = rnorm(1), v =rnorm(14), sdv = runif(1,0,3),
       beta1 = rnorm(1), beta2 = rnorm(1), beta3 = rnorm(1),
       beta4 = rnorm(1), beta5 = rnorm(1))
}

#Parámetros
Param <- c("beta0","beta1","beta2","beta3","beta4", "beta5", "v", "sdv")
```

```r
Resul2
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/RtmpAXk7nM/model15d86f9258a9.txt", fi
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##             mean    sd    2.5%     25%     50%     75%   97.5% Rhat n.eff
```

```
## beta0       -5.3 10.6   -25.2   -16.8     2.0     2.1     2.2  9.3     3
## beta1        0.0  0.0     0.0     0.0     0.0     0.0     0.0  1.0  1000
## beta2        0.2  0.0     0.2     0.2     0.2     0.2     0.2  1.0  1000
## beta3        0.4  0.0     0.4     0.4     0.4     0.4     0.5  1.0  1000
## beta4        0.4  0.0     0.4     0.4     0.4     0.4     0.4  1.0  1000
## beta5        0.5  0.0     0.4     0.4     0.5     0.5     0.5  1.0  1000
## v[1]         7.6 10.6     0.0     0.2     0.3    19.0    27.4  9.3     3
## v[2]         7.1 10.6    -0.4    -0.3    -0.2    18.6    27.0  9.3     3
## v[3]         7.1 10.6    -0.5    -0.3    -0.2    18.5    26.9  9.3     3
## v[4]         7.1 10.6    -0.5    -0.3    -0.2    18.5    26.9  9.3     3
## v[5]         7.3 10.6    -0.3    -0.1     0.0    18.7    27.1  9.3     3
## v[6]         7.4 10.6    -0.2     0.0     0.1    18.8    27.2  9.3     3
## v[7]         7.5 10.6    -0.1     0.1     0.2    18.9    27.3  9.3     3
## v[8]         7.2 10.6    -0.3    -0.2     0.0    18.6    27.0  9.3     3
## v[9]         7.0 10.6    -0.5    -0.3    -0.2    18.5    26.9  9.3     3
## v[10]        7.0 10.6    -0.6    -0.4    -0.3    18.4    26.8  9.3     3
## v[11]        8.1 10.6     0.5     0.7     0.8    19.5    27.9 17.0     3
## v[12]        7.5 10.6    -0.1     0.1     0.2    18.9    27.4  9.3     3
## v[13]        7.9 10.6     0.4     0.5     0.6    19.4    27.8  9.3     3
## v[14]        7.3 10.6    -0.3    -0.1     0.0    18.7    27.1  9.3     3
## sdv          3.5  4.4     0.2     0.3     0.4     9.7    10.0 16.6     3
## deviance 14309.3  7.1 14300.0 14300.0 14310.0 14310.0 14320.0  1.0   430
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 18.6 and DIC = 14327.8
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```
#Rhat
summary(Rhat <- (Resul2$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   1.000   3.070   9.276   7.708   9.281  17.026
```

El modelo no converge.

```
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + beta1*TMin[i,j] + beta2*Precipita[i,j] +
          beta3*AltMed[i,j] + beta4*Especies[i,j] + v[i] + g[j]
     }
     v[i] ~ dnorm(0,tauv)
   }
   g[1] ~ dnorm(0,taug)
   for (j in 2:35){
    g[j] ~  dnorm(g[j-1],taug)
   }
```

```
   taug <- 1/pow(sdg,2)
   sdg ~ dunif(0,10)
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
   beta1 ~ dflat()
   beta2 ~ dflat()
   beta3 ~ dflat()
   beta4 ~ dflat()
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures,
                                nrow = 14),
              TMin = matrix(DatosModeloSIN5$TMinMed,
                            nrow = 14),
              Precipita = matrix(DatosModeloSIN5$Precipita,
                                 nrow = 14),
              AltMed = matrix(scale(DatosModeloSIN5$AltMed),
                              nrow = 14),
              Especies = matrix(scale(DatosModeloSIN5$SumaEspecies),
                                nrow = 14))

#Iniciales
Iniciales <- function(){
  list(beta0 = rnorm(1), v =rnorm(14), sdv = runif(1,0,3),
       g = rnorm(35), sdg = runif(1,0,6), beta1 = rnorm(1), beta2 = rnorm(1),
       beta3 = rnorm(1), beta4 = rnorm(1))
}

#Parámetros
Param <- c("beta0","beta1","beta2","beta3","beta4", "v", "sdv", "g", "sdg")
```

```
Resul3
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/RtmpAXk7nM/model15d8706c2c28.txt", fi
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##             mean   sd    2.5%     25%     50%     75%   97.5% Rhat n.eff
## beta0       -0.9  0.9    -2.3    -1.5    -0.9    -0.3     1.2  1.7     6
## beta1        0.0  0.0     0.0     0.0     0.0     0.0     0.0  1.0  1000
## beta2        0.1  0.0     0.1     0.1     0.1     0.1     0.1  1.0  1000
## beta3        0.4  0.1     0.2     0.3     0.4     0.4     0.5  1.0   510
## beta4        0.4  0.0     0.3     0.3     0.4     0.4     0.4  1.0  1000
## v[1]         0.4  0.1     0.1     0.3     0.4     0.4     0.6  1.0   380
## v[2]        -0.2  0.1    -0.5    -0.3    -0.2    -0.2     0.0  1.0   560
## v[3]        -0.3  0.1    -0.6    -0.4    -0.3    -0.3    -0.1  1.0   390
## v[4]        -0.6  0.1    -0.9    -0.7    -0.6    -0.6    -0.4  1.0   770
## v[5]        -0.3  0.1    -0.5    -0.3    -0.3    -0.2     0.0  1.0   600
## v[6]         0.1  0.1    -0.1     0.1     0.1     0.2     0.4  1.0   490
## v[7]         0.2  0.1    -0.1     0.1     0.2     0.3     0.4  1.0   490
```

```
## v[8]         0.2  0.1     0.0     0.1     0.2     0.3     0.4  1.0   670
## v[9]        -0.2  0.1    -0.4    -0.3    -0.2    -0.1     0.0  1.0   650
## v[10]       -0.3  0.1    -0.5    -0.4    -0.3    -0.2     0.0  1.0   450
## v[11]        0.7  0.1     0.4     0.6     0.7     0.7     0.9  1.0   350
## v[12]        0.0  0.1    -0.2    -0.1     0.0     0.1     0.3  1.0   390
## v[13]        0.5  0.1     0.3     0.5     0.5     0.6     0.8  1.0   360
## v[14]       -0.1  0.1    -0.3    -0.2    -0.1     0.0     0.2  1.0   200
## sdv          0.4  0.1     0.3     0.3     0.4     0.5     0.6  1.0  1000
## g[1]         0.9  0.8    -1.1     0.4     0.8     1.5     2.4  1.6     7
## g[2]         0.0  1.0    -2.0    -0.6     0.0     0.6     1.8  1.5     7
## g[3]        -0.9  1.0    -3.1    -1.5    -0.9    -0.2     1.0  1.5     8
## g[4]        -1.1  1.0    -3.4    -1.8    -1.1    -0.4     0.8  1.5     8
## g[5]        -1.4  1.0    -3.5    -2.0    -1.3    -0.7     0.5  1.5     8
## g[6]         1.2  0.9    -0.9     0.6     1.2     1.9     2.7  1.7     6
## g[7]         1.8  0.9    -0.3     1.3     1.9     2.5     3.3  1.7     6
## g[8]         3.6  0.9     1.5     3.1     3.6     4.3     5.1  1.7     6
## g[9]         2.8  0.9     0.6     2.2     2.8     3.4     4.2  1.6     7
## g[10]        3.7  0.9     1.5     3.1     3.7     4.3     5.1  1.7     6
## g[11]        1.8  0.9    -0.5     1.2     1.8     2.4     3.3  1.7     6
## g[12]        1.9  0.9    -0.3     1.3     1.9     2.6     3.4  1.7     6
## g[13]        2.6  0.9     0.4     2.0     2.5     3.2     4.1  1.7     6
## g[14]        2.0  0.9    -0.1     1.5     2.0     2.7     3.6  1.7     6
## g[15]        2.6  0.9     0.4     2.0     2.6     3.2     4.0  1.7     6
## g[16]        2.1  0.9     0.0     1.6     2.1     2.7     3.6  1.7     6
## g[17]        3.9  0.9     1.7     3.3     3.9     4.5     5.3  1.7     6
## g[18]        3.0  0.9     0.9     2.5     3.0     3.6     4.5  1.7     7
## g[19]        1.7  0.9    -0.3     1.1     1.7     2.3     3.3  1.7     6
## g[20]        3.2  0.9     1.1     2.6     3.2     3.8     4.7  1.7     6
## g[21]        2.7  0.9     0.5     2.2     2.7     3.4     4.2  1.6     7
## g[22]        3.5  0.9     1.3     2.9     3.5     4.1     5.0  1.7     6
## g[23]        3.4  0.9     1.2     2.8     3.4     4.0     4.9  1.7     7
## g[24]        2.9  0.9     0.7     2.3     2.9     3.5     4.3  1.6     7
## g[25]        2.8  0.9     0.6     2.3     2.8     3.5     4.3  1.6     7
## g[26]        2.3  0.9     0.1     1.7     2.3     2.9     3.8  1.7     6
## g[27]        2.6  0.9     0.4     2.1     2.6     3.3     4.1  1.7     6
## g[28]        3.5  0.9     1.3     3.0     3.5     4.2     5.0  1.7     6
## g[29]        3.0  0.9     0.8     2.5     3.0     3.6     4.5  1.7     7
## g[30]        2.3  0.9     0.1     1.8     2.3     3.0     3.8  1.7     6
## g[31]        1.6  0.9    -0.4     1.1     1.6     2.2     3.1  1.7     6
## g[32]        3.8  0.9     1.8     3.3     3.9     4.5     5.3  1.7     6
## g[33]        3.3  0.9     1.2     2.7     3.3     3.9     4.7  1.7     6
## g[34]        2.7  0.9     0.5     2.1     2.7     3.3     4.1  1.7     6
## g[35]        3.2  0.9     1.1     2.7     3.3     3.9     4.7  1.7     7
## sdg          1.1  0.2     0.8     1.0     1.1     1.2     1.4  1.0  1000
## deviance 12028.2 10.6 12010.0 12020.0 12030.0 12030.0 12050.0  1.0   340
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 49.7 and DIC = 12078.1
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```r
#Rhat
summary(Rhat <- (Resul3$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.9996  1.0073  1.6252  1.4206  1.6956  1.7400
```

El modelo no converge.

```r
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + beta1*TMin[i,j] + beta2*Precipita[i,j] +
          beta3*Especies[i,j] + v[i]
     }
     v[i] ~ dnorm(0,tauv)
   }
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
   beta1 ~ dflat()
   beta2 ~ dflat()
   beta3 ~ dflat()

     for (i in 1:14) {
    for (j in 1:35) {
      Captures.pred[i,j] ~ dpois(lambda[i,j])
      resid[i,j] <- pow(Captures[i,j] - Captures.pred[i,j],2)
    }
}
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures,
                                nrow = 14),
              TMin = matrix(DatosModeloSIN5$TMinMed,
                            nrow = 14),
              Precipita = matrix(DatosModeloSIN5$Precipita,
                                 nrow = 14),
              Especies = matrix(scale(DatosModeloSIN5$SumaEspecies),
                                nrow = 14))

#Iniciales
Iniciales <- function(){
  list(beta0 = rnorm(1), v =rnorm(14), sdv = runif(1,0,3),
       beta1 = rnorm(1), beta2 = rnorm(1), beta3 = rnorm(1))
}
```

```r
#Parámetros
Param <- c("beta0","beta1","beta2","beta3", "v", "sdv", "resid")
```

```r
Resul4
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/RtmpAXk7nM/model15d817bc66db.txt", fi
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##                 mean     sd    2.5%     25%     50%     75%   97.5% Rhat n.eff
## beta0            2.1    0.1     1.9     2.0     2.1     2.2     2.3    1  1000
## beta1            0.0    0.0     0.0     0.0     0.0     0.0     0.0    1  1000
## beta2            0.2    0.0     0.2     0.2     0.2     0.2     0.2    1   800
## beta3            0.4    0.0     0.4     0.4     0.4     0.4     0.4    1  1000
## v[1]             0.4    0.1     0.2     0.4     0.4     0.5     0.6    1  1000
## v[2]            -0.2    0.1    -0.4    -0.2    -0.2    -0.1     0.1    1  1000
## v[3]            -0.2    0.1    -0.4    -0.3    -0.2    -0.1     0.0    1  1000
## v[4]            -0.3    0.1    -0.5    -0.4    -0.3    -0.2    -0.1    1  1000
## v[5]            -0.1    0.1    -0.3    -0.2    -0.1     0.0     0.1    1  1000
## v[6]            -0.1    0.1    -0.3    -0.1    -0.1     0.0     0.2    1  1000
## v[7]             0.2    0.1     0.0     0.1     0.2     0.3     0.4    1  1000
## v[8]             0.0    0.1    -0.2    -0.1     0.0     0.0     0.2    1  1000
## v[9]            -0.4    0.1    -0.6    -0.5    -0.4    -0.3    -0.2    1  1000
## v[10]           -0.4    0.1    -0.6    -0.4    -0.4    -0.3    -0.1    1  1000
## v[11]            0.7    0.1     0.4     0.6     0.7     0.7     0.9    1  1000
## v[12]            0.0    0.1    -0.2     0.0     0.0     0.1     0.3    1  1000
## v[13]            0.5    0.1     0.3     0.5     0.5     0.6     0.7    1  1000
## v[14]           -0.1    0.1    -0.3    -0.2    -0.1     0.0     0.1    1  1000
## sdv              0.4    0.1     0.2     0.3     0.4     0.4     0.6    1  1000
## resid[1,1]     142.5   84.3    25.0    81.0   121.0   196.0   324.0    1  1000
## resid[1,2]     149.0   88.6    25.0    81.0   144.0   196.0   361.0    1  1000
## resid[1,3]     288.6  141.3    81.0   196.0   256.0   361.0   625.0    1  1000
## resid[1,4]     287.8  141.2    81.0   196.0   256.0   361.0   625.0    1   890
## resid[1,5]     215.1  113.9    49.0   144.0   196.0   289.0   484.0    1  1000
## resid[1,6]     135.6   78.7    36.0    81.0   121.0   169.0   324.0    1   870
## resid[1,7]      65.5   54.4     1.0    25.0    49.0   100.0   196.0    1   490
## resid[1,8]     176.8   96.2    36.0   100.0   169.0   225.0   400.0    1   800
## resid[1,9]     619.5  257.6   225.0   441.0   576.0   784.0  1225.0    1   640
## resid[1,10]   1111.8  249.3   676.0   961.0  1089.0  1296.0  1600.0    1  1000
## resid[1,11]    162.1   91.6    36.0   100.0   144.0   196.0   361.0    1  1000
## resid[1,12]     77.4   64.4     4.0    25.0    64.0   100.0   225.0    1   310
## resid[1,13]    128.2  107.6     4.0    49.0   100.0   169.0   361.0    1  1000
## resid[1,14]   1519.4  512.9   676.0  1156.0  1444.0  1849.0  2601.0    1   910
## resid[1,15]     53.8   59.6     0.0     9.0    36.0    81.0   196.0    1   280
## resid[1,16]    149.7   86.9    25.0    81.0   144.0   196.0   361.0    1  1000
## resid[1,17]     98.7   64.2     4.0    49.0    81.0   144.0   255.2    1   580
## resid[1,18]     15.4   23.6     0.0     1.0     9.0    16.0    81.0    1   340
## resid[1,19]    256.0  130.0    81.0   169.0   225.0   324.0   576.0    1  1000
## resid[1,20]    575.2  165.3   289.0   441.0   576.0   676.0   900.0    1  1000
## resid[1,21]    158.4   90.2    36.0   100.0   144.0   196.0   400.0    1   580
## resid[1,22]    133.4   76.5     9.0    81.0   121.0   169.0   289.0    1   320
## resid[1,23]   6391.2  616.2  5184.0  5929.0  6400.0  6889.0  7569.0    1  1000
## resid[1,24]   1749.0  541.8   784.0  1369.0  1681.0  2116.0  2916.0    1  1000
## resid[1,25]    107.5   74.5     4.0    49.0   100.0   144.0   289.0    1   420
```

```
## resid[1,26]    161.1   95.7    36.0    81.0   144.0   217.4   400.0    1   420
## resid[1,27]     19.7   28.2     0.0     1.0     9.0    25.0   100.0    1  1000
## resid[1,28]   7579.9  770.0  6084.0  7056.0  7569.0  8100.0  9025.0    1  1000
## resid[1,29]    384.3  178.7   121.0   256.0   361.0   484.0   784.0    1  1000
## resid[1,30]    129.1   84.7    16.0    64.0   121.0   169.0   324.0    1   370
## resid[1,31]     92.3   69.1     9.0    49.0    81.0   121.0   256.0    1  1000
## resid[1,32]    403.9  201.0   121.0   256.0   361.0   484.0   900.0    1  1000
## resid[1,33]    984.0  249.3   529.0   784.0   961.0  1156.0  1521.0    1  1000
## resid[1,34]    256.3  136.5    64.0   169.0   225.0   324.0   576.0    1   920
## resid[1,35]     63.0   49.0     1.0    25.0    49.0   100.0   169.0    1   210
## resid[2,1]      55.2   41.3     4.0    25.0    49.0    81.0   144.0    1   210
## resid[2,2]      54.1   43.4     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[2,3]     130.8   79.2    25.0    81.0   121.0   169.0   324.0    1   270
## resid[2,4]      58.7   41.4     9.0    25.0    49.0    81.0   169.0    1   560
## resid[2,5]      88.2   61.6     9.0    49.0    81.0   121.0   256.0    1   430
## resid[2,6]      47.1   40.9     1.0    16.0    36.0    64.0   168.4    1  1000
## resid[2,7]       8.3   11.4     0.0     1.0     4.0     9.0    36.0    1   210
## resid[2,8]      78.9   52.8     9.0    36.0    64.0   100.0   225.0    1   470
## resid[2,9]     138.6   82.4    25.0    81.0   121.0   169.0   324.0    1   440
## resid[2,10]     45.1   52.0     0.0     9.0    25.0    64.0   169.0    1   440
## resid[2,11]     85.6   55.5     9.0    49.0    81.0   121.0   225.0    1   930
## resid[2,12]      9.6   13.3     0.0     1.0     4.0    16.0    49.0    1   950
## resid[2,13]    947.1  376.1   289.8   676.0   900.0  1156.0  1764.0    1  1000
## resid[2,14]     71.0   47.6     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[2,15]    378.2  168.7   121.0   256.0   361.0   484.0   784.0    1   920
## resid[2,16]      7.9   11.6     0.0     1.0     4.0     9.0    36.0    1   570
## resid[2,17]     35.3   35.5     0.0     9.0    25.0    49.0   121.0    1   510
## resid[2,18]    669.1  176.8   324.0   529.0   676.0   784.0  1024.0    1  1000
## resid[2,19]     85.1   56.4     9.1    49.0    81.0   121.0   225.0    1  1000
## resid[2,20]    168.5  105.0    25.0   100.0   144.0   225.0   400.0    1  1000
## resid[2,21]     48.5   47.4     1.0    16.0    36.0    64.0   169.0    1  1000
## resid[2,22]    155.0   76.3    25.0   100.0   144.0   196.0   324.0    1  1000
## resid[2,23]   5774.1 1191.1  3600.0  4900.0  5776.0  6561.0  8100.0    1  1000
## resid[2,24]    354.9  174.0   100.0   225.0   324.0   441.0   729.0    1  1000
## resid[2,25]    589.1  240.6   196.0   441.0   576.0   729.0  1156.0    1   430
## resid[2,26]     19.3   27.1     0.0     4.0     9.0    25.0    99.5    1  1000
## resid[2,27]     66.6   51.9     1.0    25.0    49.0   100.0   196.0    1   800
## resid[2,28]   8255.0  749.7  6724.0  7744.0  8281.0  8836.0  9801.0    1  1000
## resid[2,29]     55.1   40.9     4.0    25.0    49.0    81.0   168.4    1  1000
## resid[2,30]    238.9  130.8    64.0   144.0   225.0   324.0   529.0    1  1000
## resid[2,31]     74.7   54.6     9.0    36.0    64.0   100.0   225.0    1  1000
## resid[2,32]     49.6   63.2     0.0     4.0    25.0    81.0   225.0    1  1000
## resid[2,33]     18.1   25.5     0.0     1.0     9.0    25.0    81.0    1  1000
## resid[2,34]     24.3   27.6     0.0     4.0    16.0    36.0   100.0    1  1000
## resid[2,35]    740.6  291.2   289.0   529.0   729.0   900.0  1442.1    1  1000
## resid[3,1]      78.8   51.9     9.0    36.0    64.0   100.0   225.0    1   870
## resid[3,2]      58.4   42.1     4.0    25.0    49.0    81.0   169.0    1   580
## resid[3,3]      60.6   43.8     9.0    25.0    49.0    81.0   169.0    1   560
## resid[3,4]      52.9   38.8     4.0    25.0    49.0    81.0   144.0    1   420
## resid[3,5]      62.3   44.5     9.0    25.0    49.0    81.0   169.0    1  1000
## resid[3,6]      49.8   43.6     1.0    16.0    36.0    64.0   169.0    1  1000
## resid[3,7]      10.1   11.4     0.0     1.0     4.0    16.0    36.0    1  1000
## resid[3,8]      61.8   43.5     9.0    36.0    49.0    81.0   169.0    1  1000
## resid[3,9]     110.8   68.3    16.2    64.0   100.0   144.0   289.0    1  1000
```

```
## resid[3,10]     24.4   27.3     0.0     4.0    16.0    36.0   100.0    1  1000
## resid[3,11]    137.4   85.1    25.0    81.0   121.0   196.0   361.0    1   970
## resid[3,12]     21.5   26.5     0.0     4.0     9.0    25.0    81.0    1  1000
## resid[3,13]     60.5   51.5     1.0    16.0    49.0    95.2   169.0    1  1000
## resid[3,14]     61.6   41.6     9.0    25.0    49.0    81.0   169.0    1  1000
## resid[3,15]     43.9   36.5     4.0    16.0    36.0    64.0   143.4    1   470
## resid[3,16]     33.1   35.1     0.0     9.0    25.0    49.0   121.0    1  1000
## resid[3,17]    624.0  136.2   361.0   529.0   625.0   729.0   900.0    1   450
## resid[3,18]     58.8   50.3     1.0    25.0    49.0    81.0   195.3    1  1000
## resid[3,19]     33.2   31.7     1.0     9.0    25.0    49.0   121.0    1  1000
## resid[3,20]     50.1   36.2     4.0    25.0    36.0    64.0   144.0    1  1000
## resid[3,21]    130.8   78.5    25.0    81.0   121.0   169.0   324.0    1   600
## resid[3,22]   1051.2  206.7   676.0   900.0  1024.0  1225.0  1444.0    1  1000
## resid[3,23]   8886.7 1003.6  6889.0  8100.0  8836.0  9604.0 10820.0    1  1000
## resid[3,24]    218.0  128.9    36.0   121.0   196.0   289.0   529.0    1  1000
## resid[3,25]     54.7   41.2     4.0    25.0    49.0    81.0   144.0    1  1000
## resid[3,26]    132.5   78.1    25.0    81.0   121.0   169.0   324.0    1  1000
## resid[3,27]     14.9   19.1     0.0     1.0     9.0    25.0    64.0    1   510
## resid[3,28]    496.0  150.6   196.0   400.0   484.0   612.4   784.0    1  1000
## resid[3,29]     53.5   39.9     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[3,30]     57.5   40.5     4.0    25.0    49.0    81.0   144.0    1   810
## resid[3,31]    200.0   84.5    49.0   144.0   196.0   256.0   399.0    1  1000
## resid[3,32]     18.2   26.2     0.0     1.0     9.0    25.0   100.0    1   640
## resid[3,33]     98.3   68.4     9.0    49.0    81.0   144.0   256.0    1  1000
## resid[3,34]     48.5   37.8     4.0    25.0    36.0    64.0   144.0    1   570
## resid[3,35]     55.8   41.8     4.0    25.0    49.0    81.0   168.4    1   780
## resid[4,1]     162.8   92.0    36.0   100.0   144.0   196.0   400.0    1  1000
## resid[4,2]      68.9   46.3     9.0    36.0    64.0   100.0   169.0    1  1000
## resid[4,3]      54.3   39.1     4.0    25.0    49.0    81.0   144.0    1   860
## resid[4,4]      42.1   35.0     4.0    16.0    36.0    64.0   121.0    1  1000
## resid[4,5]      39.6   31.2     4.0    16.0    36.0    49.0   121.0    1   520
## resid[4,6]      23.7   34.4     0.0     4.0     9.0    25.0   121.0    1  1000
## resid[4,7]      20.7   25.8     0.0     4.0     9.0    25.0    81.0    1  1000
## resid[4,8]      54.2   39.9     4.0    25.0    49.0    81.0   168.4    1   570
## resid[4,9]      33.9   34.2     0.0     9.0    25.0    49.0   121.0    1  1000
## resid[4,10]     12.9   17.7     0.0     1.0     9.0    16.0    64.0    1   640
## resid[4,11]    373.9  118.4   169.0   289.0   361.0   441.0   625.0    1  1000
## resid[4,12]    738.1  169.6   441.0   625.0   729.0   841.0  1087.3    1  1000
## resid[4,13]     13.6   21.4     0.0     1.0     4.0    16.0    81.0    1   650
## resid[4,14]     44.4   35.1     4.0    16.0    36.0    64.0   121.0    1   610
## resid[4,15]     41.0   30.6     4.0    16.0    36.0    49.0   100.0    1  1000
## resid[4,16]      9.8   13.0     0.0     1.0     4.0    16.0    49.0    1   930
## resid[4,17]    246.1   94.2    81.0   169.0   256.0   324.0   441.0    1  1000
## resid[4,18]     96.3   61.8    16.0    49.0    81.0   121.0   256.0    1  1000
## resid[4,19]     42.4   32.1     4.0    16.0    36.0    64.0   121.0    1  1000
## resid[4,20]     22.9   23.2     0.0     4.0    16.0    36.0    81.0    1   660
## resid[4,21]     34.0   43.6     0.0     4.0    16.0    49.0   169.0    1   990
## resid[4,22]  23350.0 1639.9 20160.0 22200.0 23410.0 24340.0 26570.0    1  1000
## resid[4,23]   1936.2  661.2   900.0  1444.0  1849.0  2304.0  3364.0    1  1000
## resid[4,24]     61.0   43.4     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[4,25]     40.7   33.6     4.0    16.0    36.0    64.0   121.0    1   800
## resid[4,26]   1930.8  381.9  1225.0  1681.0  1936.0  2209.0  2704.0    1  1000
## resid[4,27]   3711.1  720.9  2401.0  3249.0  3721.0  4225.0  5184.0    1  1000
## resid[4,28]  17289.2 3535.5 11240.0 14880.0 16900.0 19600.0 25280.0    1  1000
```

```
## resid[4,29]    105.1   66.2    16.0    64.0    81.0   144.0   256.0    1  1000
## resid[4,30]     41.9   30.8     4.0    16.0    36.0    64.0   121.0    1   380
## resid[4,31]     13.4   21.0     0.0     1.0     4.0    16.0    64.0    1  1000
## resid[4,32]     11.8   16.5     0.0     1.0     4.0    16.0    64.0    1  1000
## resid[4,33]     80.3   56.5     9.0    36.0    64.0   121.0   225.0    1   430
## resid[4,34]     37.4   32.0     1.0    16.0    25.0    49.0   121.0    1  1000
## resid[4,35]     42.9   35.3     4.0    16.0    36.0    64.0   121.0    1  1000
## resid[5,1]      95.6   67.1    16.0    49.0    81.0   121.0   256.0    1  1000
## resid[5,2]      63.2   45.0     9.0    36.0    49.0    81.0   169.0    1  1000
## resid[5,3]     147.2   89.5    25.0    81.0   121.0   196.0   361.0    1  1000
## resid[5,4]      70.6   48.6     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[5,5]      69.5   49.4     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[5,6]       9.0   13.9     0.0     1.0     4.0     9.0    49.0    1   390
## resid[5,7]      57.8   42.0     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[5,8]     207.1  114.7    49.0   121.0   196.0   256.0   484.0    1  1000
## resid[5,9]      62.1   45.7     9.0    25.0    49.0    81.0   196.0    1  1000
## resid[5,10]  1027.8  209.8   625.0   900.0  1024.0  1156.0  1444.0    1  1000
## resid[5,11]     25.8   30.2     0.0     4.0    16.0    36.0   121.0    1  1000
## resid[5,12]     12.7   18.6     0.0     1.0     4.0    16.0    64.0    1  1000
## resid[5,13]    107.4   66.4    16.0    64.0   100.0   144.0   289.0    1  1000
## resid[5,14]     56.0   40.8     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[5,15]     49.0   39.4     4.0    25.0    36.0    64.0   144.0    1  1000
## resid[5,16]    178.1   78.2    36.0   121.0   169.0   225.0   361.0    1  1000
## resid[5,17]     60.6   45.0     4.0    25.0    49.0    81.0   169.0    1   850
## resid[5,18]    108.7   66.4    25.0    64.0   100.0   144.0   289.0    1  1000
## resid[5,19]     48.8   36.5     4.0    25.0    36.0    64.0   144.0    1   460
## resid[5,20]   1339.8  181.7   961.0  1225.0  1369.0  1444.0  1681.0    1  1000
## resid[5,21]     89.9   60.5     9.0    49.0    81.0   121.0   225.0    1   790
## resid[5,22]   8119.7  623.6  6889.0  7744.0  8100.0  8649.0  9216.0    1  1000
## resid[5,23]    363.9  178.8   100.0   225.0   324.0   441.0   784.0    1   890
## resid[5,24]     48.7   38.4     4.0    25.0    36.0    64.0   144.0    1   680
## resid[5,25]     42.9   35.0     1.0    16.0    36.0    64.0   143.4    1  1000
## resid[5,26]    101.5   56.2     9.0    64.0   100.0   144.0   225.0    1   910
## resid[5,27]    382.0  152.2   100.5   289.0   361.0   484.0   729.0    1   310
## resid[5,28]    888.9  355.3   361.0   625.0   841.0  1089.0  1681.0    1  1000
## resid[5,29]     91.3   58.9    16.0    49.0    81.0   121.0   225.0    1   350
## resid[5,30]     41.7   39.9     1.0    16.0    36.0    64.0   144.0    1  1000
## resid[5,31]      9.2   11.7     0.0     1.0     4.0    16.0    49.0    1   640
## resid[5,32]     49.1   44.2     1.0    16.0    36.0    64.0   169.0    1   640
## resid[5,33]    852.2  209.4   484.0   676.0   841.0  1024.0  1296.0    1   980
## resid[5,34]     47.7   36.4     4.0    25.0    36.0    64.0   144.0    1   810
## resid[5,35]     57.2   41.2     4.0    25.0    49.0    81.0   169.0    1   560
## resid[6,1]     146.8   87.0    25.0    81.0   121.0   196.0   361.0    1  1000
## resid[6,2]     101.7   63.1    16.0    49.0    90.0   144.0   256.0    1  1000
## resid[6,3]      94.0   62.6     9.0    49.0    81.0   121.0   256.0    1   960
## resid[6,4]      66.8   47.5     9.0    36.0    64.0    81.0   169.0    1  1000
## resid[6,5]     139.0   79.0    25.0    81.0   121.0   196.0   324.0    1   670
## resid[6,6]       8.2   12.0     0.0     1.0     4.0     9.0    36.0    1  1000
## resid[6,7]      66.3   46.5     4.1    36.0    64.0    81.0   195.3    1   820
## resid[6,8]     200.0   81.2    64.0   144.0   196.0   256.0   361.0    1  1000
## resid[6,9]      35.6   32.3     1.0    16.0    25.0    49.0   121.0    1  1000
## resid[6,10]  1344.5  273.1   784.0  1156.0  1369.0  1521.0  1936.0    1   450
## resid[6,11]    338.1  128.1   100.0   256.0   324.0   400.0   625.0    1   830
## resid[6,12]     55.3   50.8     1.0    16.0    36.0    81.0   196.0    1  1000
```

```
## resid[6,13]     77.8   55.5     9.0    36.0    64.0   100.0   225.0    1  1000
## resid[6,14]     72.2   50.8     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[6,15]   1473.5  310.9   900.0  1225.0  1521.0  1681.0  2116.0    1   360
## resid[6,16]     13.7   16.1     0.0     1.0     9.0    25.0    64.0    1  1000
## resid[6,17]     77.0   55.1     9.0    36.0    64.0   100.0   225.0    1  1000
## resid[6,18]    463.0  136.1   196.0   361.0   484.0   576.0   729.0    1  1000
## resid[6,19]     67.9   48.8     9.0    36.0    64.0    81.0   196.0    1  1000
## resid[6,20]    256.3  194.9     4.0   100.0   225.0   361.0   729.0    1  1000
## resid[6,21]   3396.2  977.1  1602.0  2704.0  3364.0  4096.0  5476.0    1  1000
## resid[6,22]     14.6   19.0     0.0     1.0     9.0    16.0    64.0    1   440
## resid[6,23]    103.8   65.3    16.0    49.0   100.0   144.0   256.0    1  1000
## resid[6,24]     62.8   46.2     4.0    25.0    49.0    81.0   169.0    1   510
## resid[6,25]    876.3  444.8   196.0   529.0   784.0  1156.0  1936.0    1  1000
## resid[6,26]    102.6  137.0     0.0     9.0    49.0   138.2   484.0    1  1000
## resid[6,27]    154.9  131.9     1.0    64.0   121.0   225.0   484.0    1  1000
## resid[6,28]     94.0   59.5    16.0    49.0    81.0   121.0   225.0    1   370
## resid[6,29]     61.3   45.5     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[6,30]     13.0   19.3     0.0     1.0     4.0    16.0    64.0    1   540
## resid[6,31]     32.8   35.1     0.0     9.0    25.0    49.0   121.0    1  1000
## resid[6,32]     80.2   53.4     9.0    39.2    64.0   100.0   225.0    1   880
## resid[6,33]    103.3   67.1    16.0    64.0    81.0   144.0   256.0    1  1000
## resid[6,34]     66.7   45.4     9.0    36.0    49.0    94.9   169.0    1  1000
## resid[6,35]     86.1  126.1     0.0     9.0    36.0   121.0   441.0    1  1000
## resid[7,1]     170.6   99.5    36.0   100.0   144.0   225.0   400.0    1   500
## resid[7,2]     190.5  107.8    36.0   121.0   169.0   256.0   441.0    1  1000
## resid[7,3]     149.5   87.5    25.0    81.0   144.0   196.0   361.0    1   500
## resid[7,4]      92.9   58.4    16.0    49.0    81.0   121.0   225.0    1  1000
## resid[7,5]     175.8   99.7    36.0   100.0   169.0   225.0   400.0    1  1000
## resid[7,6]     106.1   69.0    16.0    64.0   100.0   144.0   256.0    1   780
## resid[7,7]     182.6  105.2    36.0   100.0   169.0   225.0   441.0    1  1000
## resid[7,8]     116.4   72.8    16.0    64.0   100.0   144.0   289.0    1   330
## resid[7,9]      16.7   22.2     0.0     1.0     9.0    25.0    81.0    1   340
## resid[7,10]   6452.8  553.7  5329.0  6084.0  6400.0  6889.0  7569.0    1  1000
## resid[7,11]    137.9   87.0    16.0    81.0   121.0   196.0   361.0    1  1000
## resid[7,12]    216.8  113.4    49.0   121.0   196.0   289.0   484.0    1   410
## resid[7,13]    187.7  100.0    49.0   121.0   169.0   256.0   400.0    1  1000
## resid[7,14]    145.7   86.2    25.0    81.0   121.0   196.0   361.0    1   310
## resid[7,15]   1557.7  318.3   961.0  1369.0  1521.0  1764.0  2209.0    1  1000
## resid[7,16]     69.5   65.0     1.0    25.0    49.0   100.0   225.0    1  1000
## resid[7,17]    224.7  123.5    49.0   144.0   196.0   289.0   529.0    1   860
## resid[7,18]    170.2   92.1    36.0   100.0   144.0   225.0   400.0    1   430
## resid[7,19]     77.5   57.7     9.0    36.0    64.0   100.0   225.0    1  1000
## resid[7,20]     10.7   13.8     0.0     1.0     4.0    16.0    49.0    1  1000
## resid[7,21]  13063.3 1464.6 10200.0 12100.0 13114.5 14099.6 16123.7    1  1000
## resid[7,22]    657.7  258.9   256.0   484.0   625.0   784.0  1225.0    1  1000
## resid[7,23]    602.5  268.5   225.0   400.0   576.0   729.0  1225.0    1  1000
## resid[7,24]    122.0   73.1    16.2    64.0   100.0   169.0   289.0    1  1000
## resid[7,25]     16.3   23.1     0.0     1.0     9.0    25.0    81.0    1  1000
## resid[7,26]   2528.4  883.5  1024.0  1849.0  2500.0  3136.0  4356.0    1  1000
## resid[7,27]   1880.3  613.0   841.0  1444.0  1849.0  2209.0  3249.0    1   330
## resid[7,28]    440.8  198.6   144.0   289.0   400.0   576.0   959.4    1  1000
## resid[7,29]     85.3   58.0     9.0    49.0    81.0   121.0   225.0    1  1000
## resid[7,30]   1628.2  295.1  1089.0  1444.0  1600.0  1849.0  2209.0    1  1000
## resid[7,31]    170.9   91.6    36.3   100.0   144.0   225.0   400.0    1  1000
```

```
## resid[7,32]     91.1   71.0     4.0    36.0    81.0   121.0   256.0    1   700
## resid[7,33]    235.7  136.2    49.0   144.0   196.0   324.0   529.0    1   610
## resid[7,34]    123.1   76.1    25.0    64.0   100.0   169.0   324.0    1  1000
## resid[7,35]   1908.4  266.0  1369.0  1764.0  1936.0  2116.0  2401.0    1  1000
## resid[8,1]     174.2  100.0    36.0   100.0   169.0   225.0   400.0    1   170
## resid[8,2]      75.3   55.3     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[8,3]      65.5   46.3     9.0    36.0    49.0    81.0   169.0    1  1000
## resid[8,4]      60.0   43.9     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[8,5]     101.0   63.8    16.0    49.0   100.0   137.9   256.0    1  1000
## resid[8,6]     163.2   92.4    36.0   100.0   144.0   196.0   361.0    1  1000
## resid[8,7]      10.8   16.2     0.0     1.0     4.0    16.0    63.6    1   940
## resid[8,8]      31.0   25.8     1.0     9.0    25.0    49.0   100.0    1  1000
## resid[8,9]      82.3   51.6     4.0    49.0    81.0   121.0   196.0    1  1000
## resid[8,10]    866.4  182.7   485.1   729.0   841.0   961.0  1225.0    1  1000
## resid[8,11]     44.9   55.2     0.0     4.0    25.0    64.0   196.0    1   250
## resid[8,12]     17.5   25.4     0.0     1.0     9.0    25.0   100.0    1  1000
## resid[8,13]     70.8   50.2     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[8,14]     73.6   48.2     9.0    36.0    64.0   100.0   196.0    1   780
## resid[8,15]    185.5   91.3    36.0   121.0   169.0   256.0   361.0    1  1000
## resid[8,16]    271.1  135.0    81.0   169.0   256.0   361.0   576.0    1  1000
## resid[8,17]    652.4  165.0   324.0   529.0   676.0   784.0   961.0    1   600
## resid[8,18]     57.6   43.5     4.1    25.0    49.0    81.0   169.0    1   200
## resid[8,19]     16.3   21.8     0.0     1.0     9.0    25.0    81.0    1  1000
## resid[8,20]     44.8   39.4     1.0    16.0    36.0    64.0   144.0    1   700
## resid[8,21]    356.1  210.7    49.0   196.0   324.0   484.0   841.0    1  1000
## resid[8,22]     24.4   27.4     0.0     4.0    16.0    36.0   100.0    1  1000
## resid[8,23]     73.0   47.9     9.0    36.0    64.0   100.0   195.3    1   610
## resid[8,24]      9.2   14.2     0.0     1.0     4.0     9.0    49.0    1   670
## resid[8,25]   1200.1  225.4   784.0  1024.0  1225.0  1369.0  1600.0    1  1000
## resid[8,26]   1803.2  698.9   677.3  1296.0  1681.0  2209.0  3478.0    1  1000
## resid[8,27]     11.7   16.1     0.0     1.0     4.0    16.0    49.0    1  1000
## resid[8,28]     64.0   44.1     9.0    36.0    49.0    81.0   169.0    1   710
## resid[8,29]     36.7   35.9     1.0     9.0    25.0    49.0   121.0    1  1000
## resid[8,30]    140.7  200.2     0.0    16.0    64.0   196.0   676.0    1   710
## resid[8,31]  15017.2 3226.4  9413.8 12770.0 14880.0 16900.0 22200.0    1  1000
## resid[8,32]  20723.7  890.1 18770.0 20160.0 20740.0 21320.0 22492.5    1  1000
## resid[8,33]     70.6   52.6     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[8,34]     64.4   42.1     4.0    36.0    64.0    81.0   144.0    1  1000
## resid[8,35]   3612.8  374.9  2916.0  3364.0  3600.0  3844.0  4356.0    1  1000
## resid[9,1]      36.9   29.9     1.0    16.0    25.0    49.0   100.0    1   600
## resid[9,2]      43.4   36.5     1.0    16.0    36.0    64.0   144.0    1  1000
## resid[9,3]      37.3   31.5     4.0    16.0    25.0    49.0   121.0    1  1000
## resid[9,4]      19.2   21.8     0.0     4.0     9.0    25.0    81.0    1  1000
## resid[9,5]    1669.1  521.2   784.0  1296.0  1600.0  2025.0  2809.0    1  1000
## resid[9,6]      47.4   36.1     4.0    25.0    36.0    64.0   144.0    1  1000
## resid[9,7]      85.5   57.9     9.0    49.0    81.0   121.0   225.0    1  1000
## resid[9,8]      96.8   50.0    16.0    64.0   100.0   121.0   196.0    1  1000
## resid[9,9]     191.0  100.2    25.0   121.0   169.0   256.0   400.0    1  1000
## resid[9,10]   1330.5  199.5   900.0  1172.9  1369.0  1444.0  1681.0    1   310
## resid[9,11]     47.2   37.5     4.0    16.0    36.0    64.0   144.0    1   220
## resid[9,12]    216.3  113.6    49.0   144.0   196.0   289.0   484.0    1   430
## resid[9,13]     21.4   24.4     0.0     4.0    16.0    25.0    99.5    1  1000
## resid[9,14]    834.8  163.4   484.0   729.0   841.0   961.0  1156.0    1  1000
## resid[9,15]    498.9  148.5   225.0   400.0   484.0   576.0   784.0    1   550
```

```
## resid[9,16]     53.7   40.3     4.0    25.0    49.0    81.0   144.0    1   220
## resid[9,17]     81.4   60.8     4.0    36.0    64.0   100.0   225.0    1   430
## resid[9,18]     51.3   45.5     1.0    16.0    36.0    64.0   169.0    1   540
## resid[9,19]     85.3   41.8    16.0    49.0    81.0   121.0   169.0    1  1000
## resid[9,20]     19.3   19.9     0.0     4.0    16.0    25.0    80.6    1  1000
## resid[9,21]    740.4  289.1   289.0   529.0   729.0   900.0  1369.0    1   630
## resid[9,22]    327.2  164.2   100.0   225.0   289.0   400.0   676.0    1  1000
## resid[9,23]     11.1   18.7     0.0     1.0     4.0    16.0    64.0    1   630
## resid[9,24]    341.2  115.2   144.0   256.0   324.0   441.0   576.0    1   560
## resid[9,25]   2583.2  338.0  1936.0  2401.0  2601.0  2809.0  3249.0    1  1000
## resid[9,26]  14639.3 3100.0  9029.7 12374.6 14400.0 16640.0 21602.7    1  1000
## resid[9,27]    302.2  159.2    64.0   196.0   289.0   400.0   676.0    1   280
## resid[9,28]     70.0   47.9     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[9,29]   2859.8  341.5  2209.0  2601.0  2916.0  3136.0  3481.0    1   610
## resid[9,30]    902.1  157.7   576.0   784.0   900.0  1024.0  1156.0    1   880
## resid[9,31]    104.6   68.7    16.0    49.0    81.0   144.0   289.0    1  1000
## resid[9,32]     40.9   45.6     0.0     9.0    25.0    64.0   169.0    1   310
## resid[9,33]     73.2   51.8     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[9,34]    453.3  110.5   225.0   361.0   441.0   529.0   676.0    1  1000
## resid[9,35]   1449.9  224.1  1024.0  1296.0  1444.0  1600.0  1849.0    1   370
## resid[10,1]     44.4   37.6     1.0    16.0    36.0    64.0   144.0    1  1000
## resid[10,2]     35.8   32.9     1.0    16.0    25.0    49.0   121.0    1   740
## resid[10,3]     47.4   37.3     4.0    25.0    36.0    64.0   144.0    1  1000
## resid[10,4]     41.1   33.0     1.1    16.0    36.0    49.0   121.0    1  1000
## resid[10,5]     57.5   44.0     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[10,6]     25.7   24.9     1.0     9.0    16.0    36.0    81.0    1   580
## resid[10,7]     40.5   32.5     4.0    16.0    36.0    49.0   121.0    1   730
## resid[10,8]    488.6  115.5   289.0   400.0   484.0   576.0   729.0    1  1000
## resid[10,9]      8.3   10.8     0.0     1.0     4.0     9.0    36.0    1  1000
## resid[10,10]    55.2   42.3     4.0    25.0    49.0    81.0   169.0    1  1000
## resid[10,11]    26.5   24.8     1.0     9.0    25.0    36.0   100.0    1   760
## resid[10,12]    35.1   29.5     1.0    16.0    25.0    49.0   120.5    1  1000
## resid[10,13]    72.5   52.4     4.1    36.0    64.0   100.0   196.0    1  1000
## resid[10,14]   564.8  142.2   289.0   484.0   576.0   676.0   841.0    1  1000
## resid[10,15]    35.0   41.8     0.0     4.0    25.0    49.0   144.0    1   400
## resid[10,16]    51.2   42.8     1.1    25.0    36.0    64.0   144.0    1   480
## resid[10,17]    12.4   11.9     0.0     4.0     9.0    16.0    36.0    1   490
## resid[10,18]   103.8   58.3    16.0    64.0   100.0   144.0   225.0    1  1000
## resid[10,19]    30.0   26.3     1.0     9.0    25.0    36.0   100.0    1  1000
## resid[10,20]    85.3   63.4     9.0    36.0    64.0   121.0   256.0    1  1000
## resid[10,21]    75.9   54.3     9.0    36.0    64.0   100.0   225.0    1   910
## resid[10,22]    39.4   31.9     4.0    16.0    36.0    49.0   121.0    1  1000
## resid[10,23]    39.0   33.3     1.0    16.0    36.0    49.0   121.0    1   860
## resid[10,24]    13.3   21.7     0.0     1.0     4.0    16.0    81.0    1  1000
## resid[10,25]  1639.1  310.2  1025.6  1444.0  1681.0  1849.0  2209.0    1  1000
## resid[10,26]   149.1   88.1    25.0    81.0   144.0   196.0   361.0    1  1000
## resid[10,27]    42.6   33.5     4.0    16.0    36.0    64.0   144.0    1  1000
## resid[10,28]    47.9   44.0     1.0    16.0    36.0    64.0   169.0    1  1000
## resid[10,29]  5539.6  373.3  4761.0  5329.0  5625.0  5776.0  6241.0    1   760
## resid[10,30]    31.4   29.9     1.0     9.0    25.0    49.0   121.0    1   500
## resid[10,31]   857.0  354.1   289.0   625.0   784.0  1024.0  1764.0    1   900
## resid[10,32]    31.6   29.9     1.0     9.0    25.0    49.0   100.0    1  1000
## resid[10,33]    16.1   22.2     0.0     1.0     9.0    25.0    81.0    1  1000
## resid[10,34]    69.1   51.9     4.1    36.0    64.0   100.0   196.0    1  1000
```

```
## resid[10,35]    22.1   25.1     0.0     4.0    16.0    36.0    81.0    1  1000
## resid[11,1]    193.2  114.5    36.0   100.0   169.0   256.0   441.0    1  1000
## resid[11,2]    210.5  113.3    64.0   121.0   196.0   256.0   484.0    1  1000
## resid[11,3]    602.4  242.2   225.0   441.0   576.0   729.0  1156.0    1  1000
## resid[11,4]    397.1  179.4   121.0   256.0   361.0   484.0   841.0    1  1000
## resid[11,5]   1397.6  463.2   625.0  1089.0  1369.0  1681.0  2500.0    1  1000
## resid[11,6]    300.3  140.2   100.0   196.0   289.0   361.0   625.0    1   520
## resid[11,7]    242.4  126.9    49.3   144.0   225.0   324.0   529.0    1  1000
## resid[11,8]   9730.3 1476.7  6889.0  8836.0  9801.0 10820.0 12540.0    1  1000
## resid[11,9]   4347.6  571.9  3138.8  3969.0  4356.0  4761.0  5476.0    1  1000
## resid[11,10]   421.1  181.8   144.0   289.0   400.0   529.0   841.0    1  1000
## resid[11,11]   250.0  128.2    64.0   169.0   225.0   324.0   529.0    1  1000
## resid[11,12]   255.9  125.0    64.4   169.0   225.0   324.0   576.0    1  1000
## resid[11,13]   170.5  131.9     4.0    64.0   144.0   256.0   484.0    1   430
## resid[11,14]   304.6  165.1    36.0   169.0   289.0   400.0   676.0    1   440
## resid[11,15]   657.2  255.8   256.0   484.0   625.0   784.0  1225.0    1   780
## resid[11,16]   221.5  112.6    64.0   144.0   196.0   289.0   484.0    1   540
## resid[11,17]   251.5  126.8    64.0   149.9   225.0   324.0   529.0    1   910
## resid[11,18]   180.6  162.0     4.0    64.0   144.0   256.0   576.0    1  1000
## resid[11,19]   261.5  135.3    64.0   169.0   225.0   324.0   576.0    1  1000
## resid[11,20]   396.8  189.9   100.5   256.0   361.0   529.0   841.0    1  1000
## resid[11,21]   246.8  121.5    64.0   169.0   225.0   324.0   529.0    1  1000
## resid[11,22]   262.2  133.5    64.0   169.0   225.0   351.4   576.0    1  1000
## resid[11,23]   296.0  234.9     9.0   121.0   256.0   400.0   900.0    1   710
## resid[11,24]  1656.4  479.5   784.0  1296.0  1681.0  2025.0  2601.0    1  1000
## resid[11,25]   655.6  268.3   225.7   484.0   625.0   784.0  1225.0    1  1000
## resid[11,26]   257.1  130.1    81.0   169.0   225.0   324.0   576.0    1  1000
## resid[11,27]   278.8  135.7    81.0   196.0   256.0   361.0   576.0    1   710
## resid[11,28] 15058.1 2077.5 11450.0 13690.0 15130.0 16380.0 19040.0    1  1000
## resid[11,29]  6764.3 1005.3  4900.0  6084.0  6724.0  7396.0  8649.0    1  1000
## resid[11,30]   376.8  167.7   121.0   256.0   361.0   484.0   784.0    1  1000
## resid[11,31]   612.6  245.3   225.0   441.0   576.0   729.0  1156.0    1  1000
## resid[11,32]   210.6  103.6    49.0   144.0   196.0   256.0   441.0    1  1000
## resid[11,33]    78.0   93.4     0.0    16.0    49.0   100.0   361.0    1  1000
## resid[11,34]  2139.0  411.7  1369.0  1849.0  2116.0  2401.0  2916.0    1   450
## resid[11,35]   337.9  158.5   100.0   225.0   324.0   441.0   727.6    1  1000
## resid[12,1]     46.8   42.1     1.0    16.0    36.0    64.0   169.0    1  1000
## resid[12,2]     70.8   49.8     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[12,3]     89.7   63.2     9.0    49.0    81.0   121.0   256.0    1  1000
## resid[12,4]     80.0   54.1     9.0    36.0    64.0   100.0   225.0    1  1000
## resid[12,5]    180.4  104.5    36.0   100.0   169.0   225.0   441.0    1  1000
## resid[12,6]     83.1   54.7     9.1    49.0    64.0   121.0   196.0    1  1000
## resid[12,7]     19.4   26.8     0.0     1.8     9.0    25.0   100.0    1   990
## resid[12,8]   2934.7  336.1  2304.0  2704.0  2916.0  3136.0  3481.0    1  1000
## resid[12,9]     76.6   54.3     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[12,10]   208.0  118.1    49.0   121.0   196.0   256.0   527.8    1  1000
## resid[12,11]    75.6   52.8     9.0    36.0    64.0   100.0   196.0    1   900
## resid[12,12]    63.7   46.1     9.0    36.0    49.0    81.0   196.0    1   420
## resid[12,13]    25.0   33.1     0.0     4.0     9.0    36.0   121.0    1  1000
## resid[12,14]    91.8   60.4     9.1    49.0    81.0   121.0   225.0    1  1000
## resid[12,15]   153.6   90.0    36.0    81.0   144.0   196.0   361.0    1   400
## resid[12,16]    73.0   48.1     9.0    36.0    64.0   100.0   196.0    1   840
## resid[12,17]  1407.9  209.8  1024.0  1296.0  1444.0  1521.0  1764.0    1  1000
## resid[12,18]    12.4   15.3     0.0     1.0     9.0    16.0    49.0    1  1000
```

```
## resid[12,19]    95.1   62.6    16.0    49.0    81.0   121.0   256.0    1  1000
## resid[12,20]   159.6   93.2    36.0   100.0   144.0   196.0   361.0    1  1000
## resid[12,21]    64.5   42.9     9.0    36.0    49.0    81.0   169.0    1  1000
## resid[12,22]    68.5   46.8     9.0    36.0    64.0   100.0   169.0    1   620
## resid[12,23]    24.5   29.2     0.0     4.0    16.0    36.0   100.0    1  1000
## resid[12,24]   708.4  181.2   361.0   576.0   729.0   841.0  1089.0    1   910
## resid[12,25]   167.7   91.1    36.0   100.0   144.0   225.0   400.0    1  1000
## resid[12,26]    63.6   44.6     9.0    36.0    49.0    81.0   169.0    1  1000
## resid[12,27]    72.7   49.9     9.0    36.0    64.0   100.0   196.0    1   430
## resid[12,28]  1157.2  229.4   729.0  1024.0  1156.0  1296.0  1600.0    1  1000
## resid[12,29]    31.5   27.3     0.0     9.0    25.0    49.0   100.0    1  1000
## resid[12,30]   292.3  146.6    81.0   196.0   256.0   361.0   625.0    1  1000
## resid[12,31]    64.4   45.9     9.0    36.0    49.0    81.0   195.3    1   570
## resid[12,32]  3999.9  351.0  3249.0  3844.0  3969.0  4225.0  4624.0    1  1000
## resid[12,33]    12.5   16.5     0.0     1.0     4.0    16.0    64.0    1   850
## resid[12,34]    10.6   14.3     0.0     1.0     4.0    16.0    49.0    1  1000
## resid[12,35]   136.2   79.6    25.0    81.0   121.0   169.0   324.0    1  1000
## resid[13,1]    141.6   93.3    25.0    81.0   121.0   196.0   400.0    1  1000
## resid[13,2]    254.4  129.1    64.0   169.0   225.0   324.0   574.8    1   360
## resid[13,3]    223.2  115.0    64.0   144.0   210.0   289.0   484.0    1  1000
## resid[13,4]    237.7  122.2    64.0   144.0   225.0   289.0   529.0    1   290
## resid[13,5]    401.9  180.3   121.5   256.0   361.0   484.0   841.0    1   500
## resid[13,6]    181.9   98.6    49.0   121.0   169.0   225.0   441.0    1  1000
## resid[13,7]    306.8  154.7    81.0   196.0   289.0   400.0   676.0    1  1000
## resid[13,8]   1707.3  342.0  1025.6  1444.0  1681.0  1936.0  2401.0    1  1000
## resid[13,9]    224.7  123.3    49.0   144.0   196.0   289.0   529.0    1  1000
## resid[13,10]    92.8   78.5     1.0    36.0    81.0   138.2   289.0    1   350
## resid[13,11]   231.8  130.2    49.0   144.0   196.0   289.0   529.0    1   820
## resid[13,12]   103.3  109.4     1.0    25.0    81.0   144.0   400.0    1   440
## resid[13,13]    28.9   38.5     0.0     4.0    16.0    36.0   144.0    1  1000
## resid[13,14]   262.1  122.9    81.0   169.0   256.0   324.0   529.0    1  1000
## resid[13,15]   232.6  115.2    64.0   144.0   225.0   289.0   529.0    1   320
## resid[13,16]   204.8  109.0    49.0   121.0   196.0   256.0   484.0    1  1000
## resid[13,17] 17578.2 1411.5 14646.0 16640.0 17690.0 18500.0 20160.0    1  1000
## resid[13,18]    77.0   79.4     1.0    25.0    49.0   100.0   289.0    1  1000
## resid[13,19]   260.3  134.9    64.0   169.0   225.0   324.0   576.0    1  1000
## resid[13,20]   248.2  127.5    64.0   144.0   225.0   324.0   529.0    1   750
## resid[13,21]   175.9   98.4    36.0   100.0   169.0   225.0   400.0    1   610
## resid[13,22]   462.0  407.4     4.0   144.0   361.0   676.0  1519.1    1  1000
## resid[13,23]  1015.2  457.0   225.0   676.0   961.0  1296.0  2025.0    1   370
## resid[13,24]   185.4  145.0     4.0    81.0   144.0   256.0   574.8    1   620
## resid[13,25]   321.6  156.6   100.0   225.0   289.0   400.0   676.0    1  1000
## resid[13,26]   188.5  101.8    49.0   121.0   169.0   256.0   441.0    1  1000
## resid[13,27]  2875.0 1020.1  1225.0  2116.0  2809.0  3481.0  5041.0    1   890
## resid[13,28] 27012.3 1786.8 23410.0 25920.0 27230.0 28220.0 30280.0    1  1000
## resid[13,29]   208.6  114.8    49.0   121.0   196.0   256.0   484.0    1   650
## resid[13,30]   428.8  199.4   144.0   289.0   400.0   529.0   900.0    1  1000
## resid[13,31]   214.8  120.2    49.0   121.0   196.0   289.0   527.8    1  1000
## resid[13,32]   837.9  428.4   144.0   529.0   784.0  1089.0  1764.0    1  1000
## resid[13,33]  1289.3  400.0   576.0  1024.0  1296.0  1521.0  2116.0    1  1000
## resid[13,34]   558.8  240.7   196.0   361.0   529.0   676.0  1089.0    1  1000
## resid[13,35]   242.1  126.9    64.0   144.0   225.0   324.0   529.0    1  1000
## resid[14,1]     22.0   26.2     0.0     4.0    16.0    25.0   100.0    1  1000
## resid[14,2]     91.4   58.5    16.0    49.0    81.0   121.0   225.0    1   450
```

```
## resid[14,3]     64.0   45.9     4.1    25.0    49.0    81.0   195.3    1  1000
## resid[14,4]    127.6   78.3    25.0    81.0   121.0   169.0   324.0    1   340
## resid[14,5]    115.9   68.9    16.0    64.0   100.0   144.0   289.0    1  1000
## resid[14,6]     49.4   36.2     4.0    25.0    49.0    64.0   144.0    1  1000
## resid[14,7]     11.0   12.6     0.0     1.0     9.0    16.0    49.0    1  1000
## resid[14,8]     68.8   48.1     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[14,9]     80.4   57.9     9.0    36.0    64.0   100.0   225.0    1  1000
## resid[14,10]    10.9   17.0     0.0     1.0     4.0    16.0    64.0    1  1000
## resid[14,11]    78.2   51.2     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[14,12]   112.5   71.1    16.0    64.0   100.0   144.0   289.0    1  1000
## resid[14,13]   655.6  188.2   289.0   529.0   676.0   784.0  1024.0    1  1000
## resid[14,14]   128.1   82.2    16.2    64.0   121.0   169.0   324.0    1   370
## resid[14,15]   105.3   69.3    16.0    64.0   100.0   144.0   256.0    1   670
## resid[14,16]    82.4   55.6     9.0    49.0    64.0   100.0   225.0    1  1000
## resid[14,17]  1920.6  247.3  1369.0  1764.0  1936.0  2116.0  2401.0    1   790
## resid[14,18]    40.2   34.9     1.0    16.0    36.0    49.0   121.0    1  1000
## resid[14,19]   100.9   74.0     9.0    49.0    81.0   144.0   288.2    1  1000
## resid[14,20]   133.2   82.4    25.0    81.0   121.0   169.0   361.0    1  1000
## resid[14,21]    68.3   46.3     9.0    36.0    64.0   100.0   196.0    1  1000
## resid[14,22]   683.1  134.7   441.0   576.0   676.0   784.0   900.0    1  1000
## resid[14,23]  5657.0  591.6  4489.0  5184.0  5625.0  6084.0  6724.0    1   930
## resid[14,24]   359.6  169.2   121.0   225.0   324.0   441.0   784.0    1  1000
## resid[14,25]   301.2  151.1    81.0   196.0   289.0   400.0   676.0    1   550
## resid[14,26]    54.4   43.7     4.0    25.0    36.0    81.0   169.0    1  1000
## resid[14,27]    71.2   40.2     4.1    49.0    64.0   100.0   169.0    1  1000
## resid[14,28]  2276.7  251.7  1764.0  2116.0  2304.0  2500.0  2704.0    1   990
## resid[14,29]   162.7   91.8    36.0   100.0   144.0   196.0   400.0    1   490
## resid[14,30]   193.1  104.5    49.0   121.0   169.0   256.0   441.0    1   800
## resid[14,31]    38.6   48.3     0.0     4.0    25.0    49.0   169.0    1   610
## resid[14,32]   156.1   69.3    36.0   100.0   144.0   196.0   289.0    1  1000
## resid[14,33]   152.9   71.7    36.0   100.0   144.0   196.0   289.0    1  1000
## resid[14,34]   432.3  200.5   121.0   289.0   400.0   529.0   900.0    1   620
## resid[14,35]   210.6  110.7    49.0   121.0   196.0   256.0   484.0    1  1000
## deviance     15932.9    6.3 15920.0 15930.0 15930.0 15940.0 15950.0    1  1000
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 17.1 and DIC = 15950.0
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```
#Rhat
summary(Rhat <- (Resul4$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.9995  1.0005  1.0018  1.0032  1.0042  1.0375
```

```
summary(Resul4$summary[, "n.eff"])
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   170.0   760.0  1000.0   858.4  1000.0  1000.0
```

```
Resul4$DIC
```

```
## [1] 15950
```

```
Resul4$pD
```

```
## [1] 17.136
```

```
#MSE
mean(Resul4$mean$resid)
```

```
## [1] 799.2438
```

```
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + beta1*TMin[i,j] + beta2*Precipita[i,j] + beta3*AltMed[i,j] + beta4*
     }
     v[i] ~ dnorm(0,tauv)
   }
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
   beta1 ~ dflat()
   beta2 ~ dflat()
   beta3 ~ dflat()
   beta4 ~ dflat()

  for (i in 1:14) {
    for (j in 1:35) {
      Captures.pred[i,j] ~ dpois(lambda[i,j])
      resid[i,j] <- pow(Captures[i,j] - Captures.pred[i,j],2)
    }
}
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures, nrow = 14),
              TMin = matrix(DatosModeloSIN5$TMinMed, nrow = 14),
              Precipita = matrix(DatosModeloSIN5$Precipita, nrow = 14),
              AltMed = matrix(scale(DatosModeloSIN5$AltMed), nrow = 14),
              Especies = matrix(scale(DatosModeloSIN5$SumaEspecies), nrow = 14),
              Superficie = matrix((DatosModeloSIN5$Superf), nrow = 14))

#Iniciales
Iniciales <- function(){
```

```
  list(beta0 = rnorm(1), v =rnorm(14), sdv = runif(1,0,3),
       beta1 = rnorm(1), beta2 = rnorm(1), beta3 = rnorm(1), beta4 = rnorm(1))
}

#Parámetros
Param <- c("beta0","beta1","beta2","beta3","beta4", "v", "sdv", "resid")
```

```
Resul5
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/RtmpAXk7nM/model15d826215c6e.txt", fi
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##                 mean     sd    2.5%     25%     50%     75%   97.5% Rhat n.eff
## beta0           -4.1    0.1    -4.4    -4.2    -4.1    -4.1    -3.9  1.0   350
## beta1            0.0    0.0     0.0     0.0     0.0     0.0     0.0  1.0   400
## beta2            0.2    0.0     0.2     0.2     0.2     0.2     0.2  1.0  1000
## beta3            0.5    0.0     0.5     0.5     0.5     0.5     0.6  1.0   950
## beta4            0.5    0.0     0.5     0.5     0.5     0.5     0.5  1.0  1000
## v[1]             0.3    0.1     0.1     0.3     0.3     0.4     0.6  1.0   980
## v[2]            -0.3    0.1    -0.5    -0.4    -0.3    -0.2    -0.1  1.0   300
## v[3]            -0.3    0.1    -0.5    -0.4    -0.3    -0.2     0.0  1.0   790
## v[4]            -0.4    0.1    -0.6    -0.4    -0.4    -0.3    -0.1  1.0   560
## v[5]             0.0    0.1    -0.3    -0.1     0.0     0.0     0.2  1.0   320
## v[6]             0.0    0.1    -0.3    -0.1     0.0     0.0     0.2  1.0   380
## v[7]             0.2    0.1     0.0     0.1     0.2     0.3     0.4  1.0   560
## v[8]             0.0    0.1    -0.2    -0.1     0.0     0.0     0.2  1.0   590
## v[9]            -0.4    0.1    -0.7    -0.5    -0.4    -0.4    -0.2  1.0   390
## v[10]           -0.4    0.1    -0.6    -0.5    -0.4    -0.3    -0.1  1.0   880
## v[11]            0.7    0.1     0.5     0.7     0.7     0.8     1.0  1.0   410
## v[12]            0.1    0.1    -0.1     0.0     0.1     0.2     0.4  1.0   900
## v[13]            0.6    0.1     0.4     0.5     0.6     0.7     0.8  1.0   810
## v[14]           -0.1    0.1    -0.3    -0.2    -0.1     0.0     0.1  1.0  1000
## sdv              0.4    0.1     0.3     0.3     0.4     0.4     0.6  1.0  1000
## resid[1,1]       1.7    3.1     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[1,2]       1.9    3.4     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[1,3]       4.5    6.2     0.0     1.0     4.0     4.0    25.0  1.0  1000
## resid[1,4]     305.1  146.8    81.0   196.0   289.0   400.0   625.0  1.0  1000
## resid[1,5]     177.4   97.9    49.0   100.0   169.0   225.0   400.0  1.0  1000
## resid[1,6]     141.1   80.0    25.0    81.0   121.0   169.0   324.0  1.0   330
## resid[1,7]      77.4   68.4     1.0    25.0    64.0   100.0   256.0  1.0  1000
## resid[1,8]     262.6  131.5    64.0   169.0   256.0   324.0   576.0  1.0  1000
## resid[1,9]     962.9  365.8   361.0   729.0   900.0  1156.0  1764.0  1.0  1000
## resid[1,10]   1049.4  238.3   625.0   900.0  1024.0  1225.0  1521.0  1.0  1000
## resid[1,11]    189.1  104.5    49.0   121.0   169.0   256.0   441.0  1.0  1000
## resid[1,12]    116.4   91.2     9.0    49.0   100.0   169.0   360.0  1.0   460
## resid[1,13]    434.3  231.8   100.0   256.0   400.0   576.0  1024.0  1.0  1000
## resid[1,14]  15536.9 3043.8 10400.0 13460.0 15130.0 17420.0 22200.0  1.0   250
## resid[1,15]    924.9  401.8   289.8   625.0   870.0  1156.0  1849.0  1.0   320
## resid[1,16]    208.7  112.0    49.0   121.0   196.0   256.0   484.0  1.0  1000
## resid[1,17]     62.0   52.2     1.0    25.0    49.0   100.0   196.0  1.0  1000
## resid[1,18]     66.3   74.9     0.0     9.0    36.0   100.0   256.0  1.0  1000
## resid[1,19]      3.3    4.6     0.0     0.0     1.0     4.0    16.0  1.0  1000
## resid[1,20]   1228.9   66.7  1089.0  1225.0  1225.0  1296.0  1296.0  1.0   500
```

```
## resid[1,21]    168.4   94.1    36.0   100.0   144.0   225.0   400.0  1.0   550
## resid[1,22]    109.2   72.1     4.0    49.0   100.0   162.8   289.0  1.0  1000
## resid[1,23]   5715.8  671.6  4356.0  5184.0  5776.0  6241.0  7056.0  1.0  1000
## resid[1,24]   2300.4  534.5  1296.0  1936.0  2304.0  2704.0  3364.0  1.0  1000
## resid[1,25]    236.7   97.5    64.0   169.0   225.0   289.0   441.0  1.0  1000
## resid[1,26]      6.9    9.5     0.0     1.0     4.0     9.0    36.0  1.0  1000
## resid[1,27]     65.6   27.4    16.0    49.0    64.0    81.0   121.0  1.0   530
## resid[1,28]  10101.5  492.7  9029.7  9801.0 10200.0 10400.0 11030.0  1.0   700
## resid[1,29]     12.1   13.1     0.0     4.0     9.0    16.0    49.0  1.0   660
## resid[1,30]      1.9    3.0     0.0     0.0     1.0     4.0     9.0  1.0   410
## resid[1,31]     19.6   23.2     0.0     4.0    12.5    25.0    81.0  1.0  1000
## resid[1,32]    145.2   89.9    25.0    81.0   121.0   196.0   361.0  1.0  1000
## resid[1,33]   1347.5  236.8   900.0  1156.0  1369.0  1521.0  1849.0  1.0   340
## resid[1,34]    425.4  185.2   144.0   289.0   400.0   529.0   900.0  1.0  1000
## resid[1,35]     40.7   39.5     0.0     9.0    36.0    64.0   144.0  1.0   770
## resid[2,1]       0.8    1.7     0.0     0.0     0.0     1.0     4.0  1.0   500
## resid[2,2]       0.8    0.8     0.0     0.0     1.0     1.0     4.0  1.0  1000
## resid[2,3]       2.5    4.0     0.0     0.0     1.0     4.0    15.8  1.0   860
## resid[2,4]      48.0   36.5     4.0    25.0    36.0    64.0   144.0  1.0   320
## resid[2,5]      51.8   37.9     4.0    25.0    49.0    64.0   144.0  1.0   800
## resid[2,6]      39.3   36.9     1.0    16.0    25.0    49.0   144.0  1.0  1000
## resid[2,7]       8.4   11.6     0.0     1.0     4.0     9.0    36.0  1.0   490
## resid[2,8]     115.9   69.3    16.0    64.0   100.0   144.0   289.0  1.0  1000
## resid[2,9]     179.0   98.5    49.0   100.0   169.0   225.0   439.9  1.0   510
## resid[2,10]     31.4   36.9     0.0     4.0    16.0    49.0   121.0  1.0  1000
## resid[2,11]     86.5   57.5     9.1    49.0    81.0   121.0   225.0  1.0  1000
## resid[2,12]     20.1   28.8     0.0     1.0     9.0    25.0   100.0  1.0  1000
## resid[2,13]     88.6  126.2     0.0     9.0    36.0   121.0   441.0  1.0  1000
## resid[2,14]    367.4  170.5   121.0   256.0   324.0   441.0   784.0  1.0  1000
## resid[2,15]   1570.2  533.0   729.0  1156.0  1521.0  1849.0  2809.0  1.0  1000
## resid[2,16]      9.7   14.6     0.0     1.0     4.0    16.0    49.0  1.0  1000
## resid[2,17]     19.6   27.9     0.0     1.0     9.0    25.0   100.0  1.0  1000
## resid[2,18]    382.3  167.9    81.0   256.0   361.0   484.0   729.0  1.0  1000
## resid[2,19]      1.2    2.2     0.0     0.0     0.0     1.0     9.0  1.0   790
## resid[2,20]      2.0    1.8     0.0     1.0     1.0     4.0     4.0  1.0  1000
## resid[2,21]     40.4   41.1     0.0     9.0    25.0    49.0   144.0  1.0  1000
## resid[2,22]    103.2   67.8     4.0    49.0    90.5   144.0   256.0  1.0  1000
## resid[2,23]    883.1  628.7    36.3   400.0   784.0  1225.0  2398.6  1.0  1000
## resid[2,24]    199.9  109.1    49.0   121.0   196.0   256.0   441.0  1.0  1000
## resid[2,25]    174.2  106.8    36.0   100.0   144.0   225.0   441.0  1.0  1000
## resid[2,26]     26.7   13.3     1.1    16.0    25.0    36.0    49.0  1.0  1000
## resid[2,27]    302.3   64.9   169.0   256.0   324.0   361.0   400.0  1.0   740
## resid[2,28]  10741.0  497.9  9604.0 10400.0 10820.0 11030.0 11660.0  1.0   480
## resid[2,29]      1.8    2.9     0.0     0.0     1.0     4.0     9.0  1.0  1000
## resid[2,30]      5.2    6.8     0.0     1.0     4.0     9.0    25.0  1.0  1000
## resid[2,31]     17.8   19.3     0.0     4.0     9.0    25.0    64.0  1.0   890
## resid[2,32]     15.2   22.1     0.0     1.0     9.0    16.0    81.0  1.0  1000
## resid[2,33]      9.9   12.8     0.0     1.0     4.0    16.0    49.0  1.0  1000
## resid[2,34]     38.0   37.9     0.0     9.0    25.0    49.0   144.0  1.0  1000
## resid[2,35]    831.4  344.3   324.0   576.0   784.0  1024.0  1600.0  1.0   490
## resid[3,1]       1.2    2.1     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[3,2]       1.2    2.2     0.0     0.0     1.0     1.0     8.9  1.0   410
## resid[3,3]       1.5    3.0     0.0     0.0     1.0     1.0     9.0  1.0   790
## resid[3,4]      50.6   38.9     4.0    25.0    36.0    64.0   144.0  1.0   620
```

```
## resid[3,5]      35.8   30.6     1.0    16.0    25.0    49.0   121.0  1.0  1000
## resid[3,6]      64.5   52.8     4.0    25.0    49.0    81.0   196.0  1.0  1000
## resid[3,7]       7.7    9.8     0.0     1.0     4.0     9.0    36.0  1.0   610
## resid[3,8]     132.8   79.0    25.0    81.0   121.0   169.0   324.0  1.0   900
## resid[3,9]     166.0   96.5    36.0   100.0   144.0   225.0   361.0  1.0  1000
## resid[3,10]     16.1   19.8     0.0     1.0     9.0    25.0    64.0  1.0   680
## resid[3,11]    181.8   99.6    36.0   121.0   169.0   225.0   441.0  1.0  1000
## resid[3,12]     51.5   48.8     1.0    16.0    36.0    81.0   169.0  1.0   630
## resid[3,13]     41.0   56.9     0.0     4.0    16.0    49.0   196.0  1.0  1000
## resid[3,14]    331.4  159.0   100.0   225.0   289.0   400.0   729.0  1.0  1000
## resid[3,15]    157.2   87.9    36.0   100.0   144.0   196.0   361.0  1.0  1000
## resid[3,16]     76.7   66.3     1.0    25.0    64.0   100.0   225.0  1.0  1000
## resid[3,17]    453.8  141.3   196.0   361.0   441.0   529.0   729.0  1.0  1000
## resid[3,18]    240.3  131.2    49.0   144.0   225.0   324.0   529.0  1.0  1000
## resid[3,19]      2.6    1.6     0.0     1.0     4.0     4.0     4.0  1.0  1000
## resid[3,20]      0.6    1.2     0.0     0.0     0.0     1.0     4.0  1.0  1000
## resid[3,21]    164.4   93.2    36.0   100.0   144.0   225.0   400.0  1.0  1000
## resid[3,22]    817.3  218.1   400.0   676.0   841.0   961.0  1225.0  1.0  1000
## resid[3,23]   4438.2 1115.4  2401.0  3600.0  4356.0  5184.0  6724.0  1.0  1000
## resid[3,24]    124.4   88.1    16.0    64.0   100.0   169.0   360.1  1.0  1000
## resid[3,25]     15.7   16.0     0.0     4.0     9.0    25.0    49.0  1.0   670
## resid[3,26]     10.1   10.8     0.0     4.0     9.0    16.0    36.0  1.0   750
## resid[3,27]     98.4   34.5    36.0    81.0   100.0   121.0   169.0  1.0   740
## resid[3,28]    892.9  115.4   626.2   841.0   900.0   961.0  1089.0  1.0   500
## resid[3,29]      1.8    3.1     0.0     0.0     1.0     1.0     9.0  1.0   560
## resid[3,30]      1.3    2.2     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[3,31]    318.8   80.2   169.0   256.0   324.0   361.0   484.0  1.0  1000
## resid[3,32]      6.2   10.0     0.0     1.0     4.0     9.0    36.0  1.0  1000
## resid[3,33]     60.8   48.5     4.0    25.0    49.0    81.0   169.0  1.0  1000
## resid[3,34]     67.6   49.3     9.0    36.0    49.0   100.0   196.0  1.0  1000
## resid[3,35]     55.9   39.0     4.0    25.0    49.0    81.0   144.0  1.0   380
## resid[4,1]       2.8    4.1     0.0     0.0     1.0     4.0    16.0  1.0  1000
## resid[4,2]       1.8    3.1     0.0     0.0     1.0     1.0     9.0  1.0   500
## resid[4,3]       1.6    2.8     0.0     0.0     1.0     1.0     9.0  1.0   870
## resid[4,4]      27.1   24.9     1.0     9.0    16.0    36.0   100.0  1.0  1000
## resid[4,5]      22.3   20.0     1.0     9.0    16.0    36.0    81.0  1.0  1000
## resid[4,6]      51.4   57.4     0.0     9.0    36.0    81.0   196.0  1.0   370
## resid[4,7]      46.6   42.0     1.0    16.0    36.0    64.0   169.0  1.0  1000
## resid[4,8]     114.4   69.9    16.0    64.0   100.0   144.0   289.0  1.0   890
## resid[4,9]      31.4   33.4     0.0     9.0    25.0    49.0   121.0  1.0  1000
## resid[4,10]      9.6   14.2     0.0     1.0     4.0    16.0    49.0  1.0  1000
## resid[4,11]    277.0  118.8    81.0   196.0   256.0   361.0   529.0  1.0   630
## resid[4,12]    437.7  165.6   144.0   324.0   441.0   529.0   784.0  1.0  1000
## resid[4,13]     80.0   70.6     1.0    25.0    64.0   100.0   256.0  1.0  1000
## resid[4,14]    180.2  100.1    36.0   100.0   169.0   225.0   400.0  1.0  1000
## resid[4,15]    145.3   86.8    25.0    81.0   121.0   196.0   361.0  1.0   600
## resid[4,16]     24.0   32.3     0.0     4.0    16.0    36.0   100.0  1.0  1000
## resid[4,17]     94.0   71.5     1.0    36.0    81.0   121.0   256.0  1.0  1000
## resid[4,18]    289.3  145.8    81.0   196.0   256.0   361.0   625.0  1.0  1000
## resid[4,19]      0.6    1.4     0.0     0.0     0.0     1.0     4.0  1.0   620
## resid[4,20]      0.8    0.7     0.0     1.0     1.0     1.0     1.0  1.0  1000
## resid[4,21]     79.3   75.6     1.0    25.0    64.0   121.0   256.0  1.0  1000
## resid[4,22]  16539.0 1942.0 12770.0 15192.1 16640.0 17892.1 20450.0  1.0   220
## resid[4,23]  11766.5 2506.2  7396.0 10000.0 11660.0 13230.0 17420.0  1.0  1000
```

```
## resid[4,24]     20.5   18.5     1.0     9.0    16.0    25.0    64.0  1.0  1000
## resid[4,25]     12.2   12.7     0.0     4.0     9.0    16.0    49.0  1.0   880
## resid[4,26]   3412.8  255.1  2916.0  3249.0  3364.0  3600.0  3844.0  1.0   460
## resid[4,27]   6288.1  580.9  5184.0  5929.0  6241.0  6724.0  7396.0  1.0   670
## resid[4,28]   7218.8 1779.0  4225.0  5929.0  7056.0  8281.0 11030.0  1.0  1000
## resid[4,29]      2.7    4.1     0.0     0.0     1.0     4.0    16.0  1.0  1000
## resid[4,30]      1.3    2.6     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[4,31]     29.2   25.6     0.0     9.0    25.0    49.0   100.0  1.0   570
## resid[4,32]      8.8   11.1     0.0     1.0     4.0    16.0    36.0  1.0  1000
## resid[4,33]     50.3   40.0     4.0    25.0    36.0    64.0   144.0  1.0  1000
## resid[4,34]     42.1   34.4     1.0    16.0    36.0    64.0   121.0  1.0   900
## resid[4,35]     42.7   32.3     4.0    16.0    36.0    64.0   121.0  1.0   260
## resid[5,1]       2.1    3.4     0.0     0.0     1.0     4.0     9.0  1.0  1000
## resid[5,2]       1.9    3.5     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[5,3]       3.6    5.4     0.0     0.0     1.0     4.0    16.0  1.0  1000
## resid[5,4]      50.5   36.1     4.0    25.0    49.0    64.0   144.0  1.0  1000
## resid[5,5]      57.6   43.2     4.0    25.0    49.0    81.0   169.0  1.0  1000
## resid[5,6]      24.0   32.3     0.0     4.0     9.0    36.0   120.5  1.0  1000
## resid[5,7]     143.9   84.3    25.0    81.0   121.0   196.0   361.0  1.0  1000
## resid[5,8]     515.5  231.5   169.0   361.0   484.0   625.0  1024.0  1.0   970
## resid[5,9]      63.8   45.4     9.0    36.0    49.0    81.0   169.0  1.0   710
## resid[5,10]   1004.1  200.6   625.0   841.0  1024.0  1156.0  1369.0  1.0  1000
## resid[5,11]     71.0   57.1     1.1    25.0    64.0   100.0   225.0  1.0  1000
## resid[5,12]     82.5   71.5     1.0    25.0    64.0   121.0   256.0  1.0   510
## resid[5,13]    279.3  137.6    81.0   169.0   256.0   361.0   576.0  1.0  1000
## resid[5,14]    241.9  118.3    64.0   144.0   225.0   324.0   529.0  1.0  1000
## resid[5,15]    209.6  116.6    49.0   121.0   196.0   256.0   484.0  1.0  1000
## resid[5,16]     73.8   60.1     1.0    25.0    64.0   100.0   225.0  1.0  1000
## resid[5,17]    241.6  126.4    64.0   144.0   225.0   324.0   529.0  1.0  1000
## resid[5,18]    330.7  162.1    81.0   225.0   324.0   400.0   727.6  1.0   130
## resid[5,19]      0.7    1.5     0.0     0.0     0.0     1.0     4.0  1.0  1000
## resid[5,20]   1810.9   56.2  1681.0  1764.0  1849.0  1849.0  1849.0  1.0   230
## resid[5,21]    163.2   93.7    36.0   100.0   144.0   225.0   399.0  1.0   690
## resid[5,22]   6484.2  784.8  4900.0  5929.0  6561.0  7056.0  7921.0  1.0  1000
## resid[5,23]   1212.2  423.2   530.1   900.0  1156.0  1444.0  2209.0  1.0   910
## resid[5,24]     16.9   17.1     0.0     4.0     9.0    25.0    64.0  1.0  1000
## resid[5,25]     13.0   15.6     0.0     4.0     9.0    16.0    64.0  1.0  1000
## resid[5,26]    269.1   52.0   169.0   225.0   289.0   314.9   361.0  1.0   380
## resid[5,27]    789.1  133.1   529.0   676.0   784.0   900.0  1024.0  1.0  1000
## resid[5,28]    174.3  100.4    36.0   100.0   144.0   225.0   400.0  1.0   280
## resid[5,29]      2.5    3.8     0.0     0.0     1.0     4.0    15.8  1.0  1000
## resid[5,30]      4.7    3.3     0.0     1.0     4.0     9.0     9.0  1.0  1000
## resid[5,31]     16.0   14.5     0.0     4.0    16.0    25.0    49.0  1.0  1000
## resid[5,32]     32.0   31.3     0.0     9.0    25.0    49.0   121.0  1.0   600
## resid[5,33]    964.8  196.9   576.0   841.0   961.0  1089.0  1296.0  1.0  1000
## resid[5,34]     57.0   42.5     9.0    25.0    49.0    81.0   169.0  1.0  1000
## resid[5,35]     68.6   48.0     9.0    36.0    64.0   100.0   196.0  1.0  1000
## resid[6,1]       3.5    5.1     0.0     1.0     1.0     4.0    16.0  1.0   230
## resid[6,2]       2.6    4.0     0.0     0.0     1.0     4.0    16.0  1.0   540
## resid[6,3]       1.1    2.3     0.0     0.0     1.0     1.0     4.0  1.1  1000
## resid[6,4]      48.4   36.6     4.0    25.0    36.0    64.0   144.0  1.0  1000
## resid[6,5]     123.9   74.9    16.0    64.0   100.0   169.0   324.0  1.0   530
## resid[6,6]      25.9   31.3     0.0     4.0    16.0    36.0   121.0  1.0   970
## resid[6,7]     157.3   86.3    36.0   100.0   144.0   196.0   361.0  1.0  1000
```

```
## resid[6,8]     133.0   71.8    16.0    81.0   121.0   169.0   289.0  1.0  1000
## resid[6,9]      33.5   33.0     1.0     9.0    25.0    49.0   121.0  1.0  1000
## resid[6,10]   1287.9  275.1   784.0  1089.0  1296.0  1521.0  1846.8  1.0   360
## resid[6,11]    120.9   93.5     1.0    49.0   100.0   169.0   361.0  1.0  1000
## resid[6,12]    195.5  118.2    36.0   121.0   169.0   256.0   484.0  1.0  1000
## resid[6,13]    148.9   82.7    25.0    81.0   144.0   196.0   324.0  1.0  1000
## resid[6,14]    317.3  149.1   100.0   196.0   289.0   400.0   676.0  1.0   910
## resid[6,15]    305.3  212.6     9.0   144.0   256.0   441.0   784.0  1.0  1000
## resid[6,16]     30.1   41.7     0.0     4.0    16.0    36.0   144.0  1.0   430
## resid[6,17]    261.8  134.0    81.0   169.0   256.0   324.0   576.0  1.0  1000
## resid[6,18]    237.4  116.2    49.0   144.0   225.0   324.0   484.0  1.0  1000
## resid[6,19]      0.9    1.6     0.0     0.0     0.0     1.0     4.0  1.0   770
## resid[6,20]   2496.0  174.9  2116.0  2401.0  2500.0  2601.0  2809.0  1.0  1000
## resid[6,21]    440.7  513.0     1.0    81.0   256.0   625.0  1849.0  1.0   400
## resid[6,22]     74.4   82.6     0.0    16.0    49.0   100.0   289.0  1.0  1000
## resid[6,23]    180.0  104.4    36.0   100.0   169.0   225.0   441.0  1.0  1000
## resid[6,24]     21.3   19.3     1.0     9.0    16.0    25.0    81.0  1.0  1000
## resid[6,25]    131.3  130.1     1.0    36.0   100.0   196.0   484.0  1.0  1000
## resid[6,26]   2072.0  585.5  1089.0  1600.0  2025.0  2401.0  3249.0  1.0  1000
## resid[6,27]     29.9   30.3     0.0     4.0    16.0    49.0   100.0  1.0  1000
## resid[6,28]      9.1    9.8     0.0     1.0     4.0    16.0    36.0  1.0   330
## resid[6,29]      1.8    3.0     0.0     0.0     1.0     1.0     9.0  1.0   630
## resid[6,30]     59.4   16.9    25.0    49.0    64.0    81.0    81.0  1.0  1000
## resid[6,31]     13.3   18.0     0.0     1.0     9.0    16.0    64.0  1.0  1000
## resid[6,32]     56.0   40.9     4.0    25.0    49.0    81.0   144.0  1.0   820
## resid[6,33]     51.3   41.0     4.0    25.0    36.0    64.0   144.0  1.0   690
## resid[6,34]     78.1   53.9     9.0    36.0    64.0   100.0   196.0  1.0  1000
## resid[6,35]    263.5  303.3     1.0    39.2   144.0   361.0  1154.3  1.0   550
## resid[7,1]       4.0    5.4     0.0     1.0     1.0     4.0    16.0  1.0  1000
## resid[7,2]       3.9    5.5     0.0     1.0     1.0     4.0    16.0  1.0   590
## resid[7,3]       1.1    2.1     0.0     0.0     1.0     1.0     9.0  1.0   380
## resid[7,4]      60.0   43.3     9.0    25.0    49.0    81.0   169.0  1.0   400
## resid[7,5]     154.2   92.6    25.2    81.0   144.0   196.0   400.0  1.0  1000
## resid[7,6]     219.5  108.9    49.0   144.0   196.0   289.0   484.0  1.0  1000
## resid[7,7]     379.8  173.6   121.0   256.0   361.0   484.0   784.0  1.0  1000
## resid[7,8]     167.9   98.9    25.2   100.0   144.0   225.0   400.0  1.0  1000
## resid[7,9]      14.8   22.5     0.0     1.0     4.0    16.0    81.0  1.0  1000
## resid[7,10]   6231.8  571.6  5184.0  5776.0  6241.0  6561.0  7225.0  1.0  1000
## resid[7,11]    460.5  216.5   144.0   289.0   441.0   576.0   961.0  1.0  1000
## resid[7,12]    526.4  226.8   169.0   361.0   484.0   676.0  1089.0  1.0  1000
## resid[7,13]    322.4  154.9   100.0   225.0   289.0   400.0   729.0  1.0   620
## resid[7,14]    557.1  232.9   196.0   400.0   529.0   676.0  1089.0  1.0  1000
## resid[7,15]    221.4  193.5     1.0    81.0   169.0   324.0   676.0  1.0  1000
## resid[7,16]    348.0  184.3    81.0   225.0   324.0   441.0   841.0  1.0   550
## resid[7,17]    711.3  297.5   256.8   484.0   676.0   900.0  1369.0  1.0  1000
## resid[7,18]    338.5  154.9   100.0   225.0   324.0   441.0   727.6  1.0   410
## resid[7,19]      2.4    1.7     0.0     1.0     4.0     4.0     4.0  1.0  1000
## resid[7,20]    105.7   16.5    64.0   100.0   100.0   121.0   121.0  1.0  1000
## resid[7,21]   5050.3 1413.2  2500.0  3969.0  5041.0  5929.0  7744.0  1.0   470
## resid[7,22]   1621.0  521.7   729.0  1225.0  1600.0  1936.0  2809.0  1.0  1000
## resid[7,23]   1043.3  399.9   400.0   742.4  1024.0  1296.0  2025.0  1.0  1000
## resid[7,24]     39.1   32.3     4.0    16.0    36.0    49.0   121.0  1.0  1000
## resid[7,25]      7.9    9.6     0.0     1.0     4.0     9.0    36.0  1.0  1000
## resid[7,26]   7005.7 1079.3  5041.0  6241.0  6889.0  7744.0  9216.0  1.0   760
```

```
## resid[7,27]    282.9  139.9    64.4   169.0   256.0   361.0   576.0  1.0  1000
## resid[7,28]     21.1   23.0     0.0     4.0    16.0    25.0    81.0  1.0  1000
## resid[7,29]      2.2    3.4     0.0     0.0     1.0     4.0     9.0  1.0   450
## resid[7,30]   2627.8  142.2  2304.0  2500.0  2601.0  2704.0  2809.0  1.0   680
## resid[7,31]    117.6   74.1    25.0    64.0   100.0   144.0   289.0  1.0  1000
## resid[7,32]     44.1   45.2     0.0     9.0    25.0    64.0   169.0  1.0   830
## resid[7,33]     67.5   55.9     1.0    25.0    64.0   100.0   196.0  1.0  1000
## resid[7,34]    132.5   79.7    25.0    81.0   121.0   169.0   324.0  1.0  1000
## resid[7,35]   1806.3  267.9  1296.0  1600.0  1849.0  2025.0  2304.0  1.0  1000
## resid[8,1]       4.0    5.6     0.0     1.0     1.0     4.0    25.0  1.0  1000
## resid[8,2]       0.9    1.4     0.0     0.0     1.0     1.0     4.0  1.0  1000
## resid[8,3]      39.4   30.7     4.0    16.0    36.0    49.0   121.0  1.0  1000
## resid[8,4]      41.5   33.3     4.0    16.0    36.0    49.0   121.0  1.0   720
## resid[8,5]     103.0   66.1    16.0    64.0    81.0   144.0   256.0  1.0   830
## resid[8,6]     374.0  184.0   100.0   256.0   361.0   441.0   841.0  1.0   530
## resid[8,7]      31.5   37.4     0.0     4.0    16.0    49.0   143.4  1.0   740
## resid[8,8]      34.8   26.5     1.0    16.0    25.0    49.0   100.0  1.0   720
## resid[8,9]      79.7   51.0     4.0    36.0    81.0   100.0   196.0  1.0  1000
## resid[8,10]    732.5  187.5   361.0   576.0   729.0   841.0  1089.0  1.0   600
## resid[8,11]    480.9  273.5   100.0   289.0   441.0   625.0  1156.0  1.0  1000
## resid[8,12]     62.1   55.5     1.0    25.0    49.0    81.0   196.0  1.0  1000
## resid[8,13]    274.4  137.4    81.0   169.0   256.0   361.0   625.0  1.0  1000
## resid[8,14]    346.7  165.4   100.0   225.0   324.0   441.0   729.0  1.0   470
## resid[8,15]     76.5   95.2     0.0     9.0    49.0   100.0   361.0  1.0  1000
## resid[8,16]   1018.1  365.1   441.0   729.0   961.0  1225.0  1849.0  1.0   770
## resid[8,17]    322.4  152.0    64.4   225.0   324.0   400.0   625.0  1.0  1000
## resid[8,18]      0.7    1.5     0.0     0.0     0.0     1.0     4.0  1.0  1000
## resid[8,19]     20.3    5.8     9.0    16.0    25.0    25.0    25.0  1.0  1000
## resid[8,20]      2.5    1.7     0.0     1.0     4.0     4.0     4.0  1.0  1000
## resid[8,21]   3028.8  966.6  1444.0  2304.0  2916.0  3600.0  5180.4  1.0   400
## resid[8,22]     64.4   52.4     1.0    25.0    49.0   100.0   196.0  1.0  1000
## resid[8,23]     23.3   20.4     1.0     9.0    16.0    36.0    81.0  1.0  1000
## resid[8,24]     10.0   10.1     0.0     1.0     9.0    16.0    36.0  1.0  1000
## resid[8,25]   1419.4  195.8  1024.0  1296.0  1444.0  1521.0  1764.0  1.0   390
## resid[8,26]    151.8  139.7     1.0    49.0   121.0   225.0   529.0  1.0  1000
## resid[8,27]     77.9   30.2    25.0    49.0    81.0   100.0   144.0  1.0   540
## resid[8,28]      1.7    3.1     0.0     0.0     1.0     1.0     9.0  1.0   670
## resid[8,29]      5.1    3.3     0.0     4.0     4.0     9.0     9.0  1.0  1000
## resid[8,30]   6991.3  998.9  5041.0  6241.0  7056.0  7744.0  9025.0  1.0  1000
## resid[8,31]  31547.2 5739.8 21610.0 27560.0 31330.0 34970.0 43249.7  1.0  1000
## resid[8,32]  21523.7  780.2 19880.0 21030.0 21610.0 22200.0 22800.0  1.0  1000
## resid[8,33]     76.3   51.6     9.0    36.0    64.0   100.0   196.0  1.0  1000
## resid[8,34]     54.9   40.6     1.0    25.0    49.0    81.0   144.0  1.0   600
## resid[8,35]   3210.6  412.5  2401.0  2916.0  3249.0  3481.0  3969.0  1.0  1000
## resid[9,1]       1.1    2.1     0.0     0.0     0.0     1.0     9.0  1.0  1000
## resid[9,2]       0.8    1.0     0.0     0.0     1.0     1.0     4.0  1.0  1000
## resid[9,3]      23.3   21.9     1.0     9.0    16.0    36.0    81.0  1.0   770
## resid[9,4]      15.3   18.8     0.0     1.0     9.0    25.0    64.0  1.0   350
## resid[9,5]    4306.3 1166.5  2304.0  3481.0  4225.0  4900.0  6889.0  1.0  1000
## resid[9,6]      86.4   57.9     9.0    49.0    81.0   121.0   225.0  1.0  1000
## resid[9,7]     126.8   79.4    25.0    64.0   121.0   169.0   324.0  1.0  1000
## resid[9,8]     109.9   52.1    25.0    81.0   100.0   144.0   225.0  1.0   770
## resid[9,9]      86.3   73.2     1.0    25.0    64.0   121.0   256.0  1.0  1000
## resid[9,10]   1208.3  220.6   784.0  1089.0  1225.0  1369.0  1600.0  1.0   220
```

```
## resid[9,11]    107.1   67.7    16.2    49.0   100.0   144.0   289.0  1.0  1000
## resid[9,12]    388.7  172.4   121.0   256.0   361.0   484.0   784.0  1.0  1000
## resid[9,13]    122.6   84.9    16.0    64.0   100.0   169.0   324.0  1.0  1000
## resid[9,14]    297.7  156.0    49.4   169.0   289.0   400.0   625.0  1.0  1000
## resid[9,15]     39.7   54.7     0.0     4.0    16.0    49.0   196.0  1.0  1000
## resid[9,16]    143.6   82.4    36.0    81.0   121.0   196.0   324.0  1.0   440
## resid[9,17]    219.1  134.6    36.0   121.0   196.0   289.0   576.0  1.0  1000
## resid[9,18]      6.3    3.1     1.0     4.0     9.0     9.0     9.0  1.0  1000
## resid[9,19]    211.8   19.0   169.0   196.0   225.0   225.0   225.0  1.0   420
## resid[9,20]    107.5   16.6    64.0   100.0   121.0   121.0   121.0  1.0  1000
## resid[9,21]   3051.7  862.8  1600.0  2401.0  2916.0  3600.0  4900.0  1.0  1000
## resid[9,22]    536.6  225.9   196.0   400.0   529.0   676.0  1089.0  1.0  1000
## resid[9,23]      7.7    7.8     0.0     1.0     4.0     9.0    25.0  1.0  1000
## resid[9,24]    460.5  107.0   256.0   400.0   484.0   529.0   676.0  1.0  1000
## resid[9,25]   2891.1  327.2  2209.0  2704.0  2916.0  3136.0  3481.0  1.0   490
## resid[9,26]   5751.8 1463.3  3364.0  4624.0  5625.0  6724.0  8836.0  1.0  1000
## resid[9,27]     14.6   18.2     0.0     4.0     9.0    16.0    64.0  1.0  1000
## resid[9,28]      1.7    3.2     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[9,29]   3879.8  156.0  3600.0  3721.0  3844.0  3969.0  4096.0  1.0   420
## resid[9,30]   1288.3   75.3  1089.0  1225.0  1296.0  1369.0  1369.0  1.0   960
## resid[9,31]     75.0   53.0     9.0    36.0    64.0   100.0   196.0  1.0   650
## resid[9,32]      8.7   12.5     0.0     1.0     4.0     9.0    36.0  1.0   500
## resid[9,33]     72.5   48.5     9.0    36.0    64.0   100.0   196.0  1.0  1000
## resid[9,34]    413.2  110.3   196.0   324.0   400.0   484.0   625.0  1.0   980
## resid[9,35]   1227.1  237.4   784.0  1089.0  1225.0  1369.0  1681.0  1.0  1000
## resid[10,1]      0.8    1.2     0.0     0.0     1.0     1.0     4.0  1.0   770
## resid[10,2]      0.8    0.8     0.0     0.0     1.0     1.0     1.0  1.1   430
## resid[10,3]     31.3   27.6     1.0     9.0    25.0    45.8   100.0  1.0   680
## resid[10,4]     36.0   31.9     1.0    16.0    25.0    49.0   121.0  1.0   960
## resid[10,5]     76.0   51.5     9.0    36.0    64.0   100.0   196.0  1.0   620
## resid[10,6]     47.1   38.1     4.0    16.0    36.0    64.0   144.0  1.0   490
## resid[10,7]     45.4   36.6     4.0    16.0    36.0    64.0   144.0  1.0  1000
## resid[10,8]    496.4  108.1   289.0   441.0   484.0   576.0   729.0  1.0   950
## resid[10,9]      8.6   12.4     0.0     1.0     4.0     9.0    36.0  1.0   770
## resid[10,10]    97.9   63.4    16.0    49.0    81.0   144.0   256.0  1.0  1000
## resid[10,11]    54.8   42.3     4.0    25.0    49.0    81.0   168.4  1.0  1000
## resid[10,12]    45.5   36.3     4.0    16.0    36.0    64.0   144.0  1.0   840
## resid[10,13]   365.0  175.3   100.0   225.0   324.0   441.0   784.0  1.0  1000
## resid[10,14]   135.8  101.1     1.1    49.0   121.0   196.0   361.0  1.0   560
## resid[10,15]   892.9  392.5   289.0   625.0   841.0  1089.0  1849.0  1.0   860
## resid[10,16]   153.8   91.6    25.0    81.0   144.0   196.0   361.0  1.0   730
## resid[10,17]     8.6   10.0     0.0     1.0     4.0    16.0    36.0  1.0  1000
## resid[10,18]   336.0   29.7   256.8   324.0   361.0   361.0   361.0  1.0  1000
## resid[10,19]     0.7    0.7     0.0     0.0     1.0     1.0     1.0  1.0  1000
## resid[10,20]     1.0    1.4     0.0     0.0     1.0     1.0     4.0  1.0  1000
## resid[10,21]   163.3   87.7    36.0   100.0   144.0   225.0   361.0  1.0  1000
## resid[10,22]    46.8   35.9     4.0    17.9    36.0    64.0   144.0  1.0  1000
## resid[10,23]    97.3   42.1    25.0    64.0   100.0   121.0   169.0  1.0   580
## resid[10,24]    11.2   12.7     0.0     1.0     4.0    16.0    49.0  1.0   680
## resid[10,25]  1781.4  314.5  1156.0  1600.0  1764.0  2025.0  2401.0  1.0   870
## resid[10,26]    21.1   20.1     1.0     9.0    16.0    25.0    81.0  1.0  1000
## resid[10,27]     3.5    5.1     0.0     1.0     1.0     4.0    16.0  1.0   480
## resid[10,28]     1.9    1.7     0.0     1.0     1.0     4.0     4.0  1.0  1000
## resid[10,29]  6409.4  151.1  6084.0  6400.0  6400.0  6561.0  6561.0  1.0   250
```

```
## resid[10,30]     1.0    1.6     0.0     0.0     1.0     1.0     4.0  1.0  1000
## resid[10,31]   961.1  379.9   361.0   729.0   900.0  1156.0  1849.0  1.0   350
## resid[10,32]     9.1   11.5     0.0     1.0     4.0    16.0    36.0  1.0  1000
## resid[10,33]    23.6   31.8     0.0     4.0     9.0    36.0   121.0  1.0  1000
## resid[10,34]   101.6   68.9    16.0    49.0    81.0   144.0   289.0  1.0   630
## resid[10,35]    75.0   62.3     4.0    25.0    64.0   100.0   225.0  1.0   860
## resid[11,1]      6.8    5.3     0.0     4.0     4.0     9.0    16.0  1.0   950
## resid[11,2]      1.5    2.8     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[11,3]    538.3  230.4   196.0   361.0   484.0   676.0  1089.0  1.0   700
## resid[11,4]    512.3  212.5   169.0   361.0   484.0   625.0  1024.0  1.0  1000
## resid[11,5]   3167.6  852.7  1681.0  2601.0  3136.0  3600.0  5041.0  1.0  1000
## resid[11,6]    451.8  193.1   144.0   324.0   441.0   576.0   900.0  1.0  1000
## resid[11,7]    311.7  151.8   100.0   196.0   289.0   400.0   676.0  1.0  1000
## resid[11,8]   7943.5 1564.7  4903.5  6889.0  7921.0  9025.0 11030.0  1.0   760
## resid[11,9]   3569.2  596.1  2403.4  3136.0  3600.0  3969.0  4761.0  1.0   520
## resid[11,10]   873.6  338.4   324.0   625.0   841.0  1089.0  1600.0  1.0  1000
## resid[11,11]   420.4  188.4   144.0   289.0   400.0   529.0   898.5  1.0   350
## resid[11,12]   389.6  175.2   121.0   256.0   361.0   484.0   784.0  1.0  1000
## resid[11,13]   955.4  537.2   196.0   576.0   841.0  1225.0  2209.0  1.0   580
## resid[11,14]  1205.6  627.7   256.0   729.0  1089.0  1600.0  2601.0  1.0   570
## resid[11,15]  6208.1 1563.8  3603.0  5041.0  5929.0  7225.0  9604.0  1.0  1000
## resid[11,16]   466.1  204.6   169.0   324.0   441.0   576.0   900.0  1.0   510
## resid[11,17]   446.0  201.5   144.0   289.0   400.0   576.0   900.0  1.0  1000
## resid[11,18]   306.0   53.8   196.0   256.0   324.0   361.0   400.0  1.0   680
## resid[11,19]     1.7    2.2     0.0     0.0     1.0     4.0     4.0  1.0   430
## resid[11,20]     2.8    3.4     0.0     1.0     1.0     4.0     9.0  1.0   930
## resid[11,21]   388.3  175.2   121.0   256.0   361.0   484.0   784.0  1.0  1000
## resid[11,22]   372.8  177.5   121.0   256.0   324.0   484.0   784.0  1.0   670
## resid[11,23]    36.3   56.0     0.0     4.0    16.0    49.0   196.0  1.0   320
## resid[11,24]  2087.4  511.4  1089.0  1764.0  2116.0  2401.0  3136.0  1.0  1000
## resid[11,25]   476.2  202.7   169.0   324.0   441.0   576.0   900.0  1.0  1000
## resid[11,26]    21.1   20.2     1.0     9.0    16.0    25.0    81.0  1.0   990
## resid[11,27]    20.5   18.9     1.0     9.0    16.0    25.0    64.0  1.0  1000
## resid[11,28] 31041.6 1091.1 28900.0 30280.0 30980.0 31680.0 33120.0  1.0  1000
## resid[11,29] 12255.5  591.3 11030.0 11880.0 12320.0 12770.0 13230.0  1.0   570
## resid[11,30]    14.5   15.2     0.0     4.0     9.0    16.0    49.0  1.0  1000
## resid[11,31]   329.4  159.8    81.0   225.0   324.0   400.0   729.0  1.0  1000
## resid[11,32]    80.0   53.8     9.0    36.0    64.0   100.0   225.0  1.0  1000
## resid[11,33]   246.3  200.1     9.0   100.0   196.0   324.0   784.0  1.0  1000
## resid[11,34]  1278.6  406.8   576.0   961.0  1225.0  1521.0  2116.0  1.0  1000
## resid[11,35]   806.8  316.2   324.0   576.0   729.0   961.0  1521.0  1.0   510
## resid[12,1]      5.6    3.3     0.0     4.0     4.0     9.0     9.0  1.0  1000
## resid[12,2]      1.2    2.1     0.0     0.0     1.0     1.0     9.0  1.0   310
## resid[12,3]     89.4   62.2    16.0    49.0    81.0   121.0   256.0  1.0  1000
## resid[12,4]    103.8   65.1    16.0    49.0   100.0   144.0   256.0  1.0  1000
## resid[12,5]    234.5  125.5    49.0   144.0   225.0   289.0   529.0  1.0  1000
## resid[12,6]    111.2   69.1    16.0    64.0   100.0   144.0   289.0  1.0  1000
## resid[12,7]     35.3   41.6     0.0     4.0    25.0    49.0   144.0  1.0  1000
## resid[12,8]   2697.3  355.0  2025.0  2500.0  2704.0  2916.0  3364.0  1.0  1000
## resid[12,9]    140.1   83.9    36.0    81.0   121.0   196.0   361.0  1.0   420
## resid[12,10]   421.4  199.6   121.0   289.0   400.0   529.0   900.0  1.0   230
## resid[12,11]   119.9   75.6    25.0    64.0   100.0   144.0   324.0  1.0   550
## resid[12,12]    95.4   62.6    16.0    49.0    81.0   121.0   256.0  1.0   210
## resid[12,13]   398.6  210.4   100.0   256.0   361.0   529.0   900.0  1.0  1000
```

```
## resid[12,14]   724.1  291.9   256.0   529.0   676.0   900.0  1369.0  1.0  1000
## resid[12,15]  1200.1  435.5   484.0   900.0  1156.0  1444.0  2116.0  1.0  1000
## resid[12,16]   133.6   82.2    25.0    81.0   121.0   169.0   324.0  1.0  1000
## resid[12,17]  1190.6  224.7   729.0  1024.0  1190.0  1369.0  1600.0  1.0   730
## resid[12,18]   104.7   17.9    64.0   100.0   100.0   121.0   121.0  1.0   300
## resid[12,19]     1.9    3.2     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[12,20]     2.6    4.1     0.0     0.0     1.0     4.0    16.0  1.0  1000
## resid[12,21]    90.0   57.9    16.0    49.0    81.0   121.0   225.0  1.0  1000
## resid[12,22]    95.7   59.8    16.0    49.0    81.0   121.0   225.0  1.0   650
## resid[12,23]    62.7   42.3     1.0    36.0    49.0    81.0   169.0  1.0   810
## resid[12,24]   811.2  176.4   442.0   676.0   784.0   961.0  1156.0  1.0  1000
## resid[12,25]   100.9   63.3    16.0    49.0    81.0   144.0   256.0  1.0   340
## resid[12,26]     5.8    8.3     0.0     1.0     4.0     9.0    25.0  1.0   500
## resid[12,27]     6.4    8.2     0.0     1.0     4.0     9.0    25.0  1.0   320
## resid[12,28]  1878.7  109.8  1602.0  1849.0  1936.0  1936.0  2025.0  1.0   660
## resid[12,29]   135.1   26.8    81.0   121.0   144.0   144.0   169.0  1.0  1000
## resid[12,30]    11.0   11.9     0.0     4.0     9.0    16.0    36.0  1.0  1000
## resid[12,31]    25.3   23.6     1.0     9.0    16.0    36.0    81.0  1.0   830
## resid[12,32]  4381.2  298.2  3721.0  4225.0  4356.0  4624.0  4900.0  1.0  1000
## resid[12,33]    17.0   30.4     0.0     1.0     4.0    16.0   100.0  1.0  1000
## resid[12,34]    35.0   50.7     0.0     4.0    16.0    49.0   169.0  1.0  1000
## resid[12,35]   277.1  136.8    81.0   169.0   256.0   361.0   576.0  1.0  1000
## resid[13,1]      1.8    1.9     0.0     1.0     1.0     4.0     4.0  1.0  1000
## resid[13,2]      3.6    4.7     0.0     1.0     1.0     4.0    16.0  1.0   600
## resid[13,3]    224.5  111.1    64.0   144.0   196.0   289.0   484.0  1.0  1000
## resid[13,4]    313.6  147.5   100.0   196.0   289.0   400.0   625.0  1.0  1000
## resid[13,5]    480.6  207.7   169.0   324.0   441.0   625.0   961.0  1.0  1000
## resid[13,6]    256.9  127.0    64.0   169.0   225.0   324.0   576.0  1.0  1000
## resid[13,7]    504.4  221.4   169.0   332.9   484.0   625.0  1024.0  1.0   420
## resid[13,8]   1360.5  348.6   729.0  1089.0  1369.0  1600.0  2116.0  1.0  1000
## resid[13,9]    425.5  190.9   144.0   289.0   400.0   529.0   841.0  1.0  1000
## resid[13,10]    39.0   49.6     0.0     4.0    25.0    49.0   169.0  1.0  1000
## resid[13,11]   360.8  165.6   121.0   232.4   324.0   441.0   729.0  1.0  1000
## resid[13,12]   376.8  245.8    49.0   196.0   324.0   529.0   961.0  1.0   510
## resid[13,13]  1726.3  731.1   625.0  1225.0  1681.0  2116.0  3481.0  1.0   370
## resid[13,14]  2327.2  688.3  1225.0  1849.0  2209.0  2704.0  3844.0  1.0  1000
## resid[13,15]  1455.1  489.4   676.0  1089.0  1369.0  1764.0  2601.0  1.0  1000
## resid[13,16]   405.3  183.5   121.0   289.0   400.0   529.0   841.0  1.0   900
## resid[13,17] 13775.1 1639.7 10400.0 12770.0 13690.0 14880.0 17160.0  1.0   840
## resid[13,18]    87.1   23.0    49.0    67.9    81.0   100.0   121.0  1.0  1000
## resid[13,19]     2.3    4.4     0.0     0.0     1.0     4.0    16.0  1.0   850
## resid[13,20]     1.4    2.5     0.0     0.0     1.0     1.0     9.0  1.0   640
## resid[13,21]   250.8  129.2    64.0   169.0   225.0   324.0   529.0  1.0  1000
## resid[13,22]  2546.9 1232.8   676.0  1681.0  2304.0  3334.9  5472.3  1.0   620
## resid[13,23]  1571.6  515.5   625.0  1225.0  1521.0  1936.0  2601.0  1.0  1000
## resid[13,24]    92.5   92.2     1.0    25.0    64.0   121.0   324.0  1.0  1000
## resid[13,25]   147.2   82.4    36.0    81.0   144.0   196.0   361.0  1.0  1000
## resid[13,26]    14.6   16.0     0.0     4.0     9.0    16.0    49.0  1.0  1000
## resid[13,27]    24.8   31.9     0.0     4.0    16.0    36.0   121.0  1.0   290
## resid[13,28] 34630.1  801.1 33120.0 34230.0 34600.0 35340.0 36100.0  1.0  1000
## resid[13,29]     8.1    9.5     0.0     1.0     4.0     9.0    36.0  1.0   370
## resid[13,30]     6.9    8.9     0.0     1.0     4.0     9.0    36.0  1.0   220
## resid[13,31]    87.2   60.0     9.0    49.0    81.0   121.0   225.0  1.0  1000
## resid[13,32]  2031.3  542.3  1024.0  1681.0  2025.0  2401.0  3136.0  1.0  1000
```

```
## resid[13,33]   447.0  282.7    36.0   256.0   400.0   625.0  1089.0  1.0   480
## resid[13,34]  1313.0  436.4   625.0  1024.0  1296.0  1521.0  2304.0  1.0  1000
## resid[13,35]   390.3  179.6   121.0   256.0   361.0   484.0   841.0  1.0  1000
## resid[14,1]      6.5    3.0     1.0     4.0     9.0     9.0     9.0  1.0  1000
## resid[14,2]      1.9    3.3     0.0     0.0     1.0     1.0     9.0  1.0  1000
## resid[14,3]     71.6   53.1     9.0    36.0    64.0   100.0   196.0  1.0  1000
## resid[14,4]    154.5   89.4    25.0    81.0   144.0   196.0   361.0  1.0  1000
## resid[14,5]     89.4   55.0    16.0    49.0    81.0   121.0   225.0  1.0  1000
## resid[14,6]     61.1   46.0     9.0    25.0    49.0    81.0   196.0  1.0  1000
## resid[14,7]      9.2   13.9     0.0     1.0     4.0     9.0    49.0  1.0  1000
## resid[14,8]    109.7   67.6    16.0    64.0   100.0   144.0   256.0  1.0   390
## resid[14,9]    154.5   92.2    25.0    81.0   144.0   196.0   400.0  1.0  1000
## resid[14,10]    13.3   21.8     0.0     1.0     4.0    16.0    81.0  1.0  1000
## resid[14,11]   103.7   64.3    16.0    64.0   100.0   144.0   256.0  1.0  1000
## resid[14,12]   229.1  123.0    49.0   144.0   196.0   289.0   484.0  1.0   260
## resid[14,13]    50.0   69.2     0.0     4.0    25.0    64.0   256.0  1.0   930
## resid[14,14]   960.0  370.1   400.0   676.0   900.0  1156.0  1764.0  1.0  1000
## resid[14,15]   517.6  223.9   169.0   361.0   484.0   625.0  1024.0  1.0  1000
## resid[14,16]   147.5   84.3    25.0    81.0   121.0   196.0   361.0  1.0  1000
## resid[14,17]  1576.9  275.4  1089.0  1369.0  1600.0  1764.0  2116.0  1.0   550
## resid[14,18]     2.3    1.7     0.0     1.0     1.0     4.0     4.0  1.0  1000
## resid[14,19]     8.3    5.3     0.0     4.0     9.0    16.0    16.0  1.0  1000
## resid[14,20]     1.5    2.8     0.0     0.0     1.0     1.0     9.0  1.0   860
## resid[14,21]    87.4   55.6     9.0    49.0    81.0   121.0   225.0  1.0  1000
## resid[14,22]   592.3  143.6   289.8   484.0   576.0   676.0   841.0  1.0  1000
## resid[14,23]  6002.7  576.5  4761.0  5625.0  6084.0  6400.0  7056.0  1.0  1000
## resid[14,24]   209.5  113.0    49.0   121.0   196.0   256.0   484.0  1.0   550
## resid[14,25]   127.4   79.7    25.0    81.0   110.0   169.0   324.0  1.0  1000
## resid[14,26]     2.7    5.0     0.0     0.0     1.0     4.0    16.0  1.0  1000
## resid[14,27]   172.6   35.2   100.0   144.0   169.0   196.0   225.0  1.0  1000
## resid[14,28]  2893.0  122.2  2601.0  2809.0  2916.0  3025.0  3025.0  1.0  1000
## resid[14,29]     6.5    7.9     0.0     1.0     4.0     9.0    25.0  1.0   380
## resid[14,30]     5.2    7.3     0.0     1.0     4.0     9.0    25.0  1.0   490
## resid[14,31]    14.1   18.5     0.0     1.0     9.0    16.0    64.0  1.0  1000
## resid[14,32]   224.8   64.2   100.0   169.0   225.0   256.0   361.0  1.0   610
## resid[14,33]    70.7   56.1     1.1    25.0    64.0   100.0   196.0  1.0  1000
## resid[14,34]   917.0  348.0   361.0   676.0   900.0  1089.0  1681.0  1.0  1000
## resid[14,35]   307.6  160.4    81.0   196.0   289.0   400.0   676.0  1.0  1000
## deviance     19786.2    6.5 19780.0 19780.0 19790.0 19790.0 19800.0  1.0  1000
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 17.5 and DIC = 19803.8
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```
#Rhat
summary(Rhat <- (Resul5$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.9995  1.0008  1.0023  1.0049  1.0054  1.1053
```

```r
summary(Resul5$summary[, "n.eff"])
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   130.0   670.0  1000.0   839.5  1000.0  1000.0
```

```r
Resul5$DIC
```

```
## [1] 19803.8
```

```r
Resul5$pD
```

```
## [1] 17.536
```

```r
#MSE
mean(Resul5$mean$resid)
```

```
## [1] 937.8168
```

```r
set.seed(22)

Modelo <- function(){
   for (i in 1:14){
     for (j in 1:35){
        Captures[i,j] ~ dpois(lambda[i,j])
        log(lambda[i,j]) <- beta0 + beta1*TMin[i,j] + beta2*Precipita[i,j] +
          beta3*AltMed[i,j] + beta4*Especies[i,j] + v[i]
     }
     v[i] ~ dnorm(0,tauv)
   }
   tauv <- 1/pow(sdv,2)
   sdv ~ dunif(0,10)

   #distribuciones iniciales
   beta0 ~ dflat()
   beta1 ~ dflat()
   beta2 ~ dflat()
   beta3 ~ dflat()
   beta4 ~ dflat()

  for (i in 1:14) {
    for (j in 1:35) {
      Captures.pred[i,j] ~ dpois(lambda[i,j])
      resid[i,j] <- pow(Captures[i,j] - Captures.pred[i,j],2)
    }
}
}

#Datos
Datos <- list(Captures = matrix(DatosModeloSIN5$Captures, nrow = 14),
              TMin = matrix(DatosModeloSIN5$TMinMed, nrow = 14),
```

```
              Precipita = matrix(DatosModeloSIN5$Precipita, nrow = 14),
              AltMed = matrix(scale(DatosModeloSIN5$AltMed), nrow = 14),
              Especies = matrix(scale(DatosModeloSIN5$SumaEspecies), nrow = 14))

#Iniciales
Iniciales <- function(){
  list(beta0 = rnorm(1), v =rnorm(14), sdv = runif(1,0,3),
       beta1 = rnorm(1), beta2 = rnorm(1), beta3 = rnorm(1), beta4 = rnorm(1))
}

#Parámetros
Param <- c("beta0","beta1","beta2","beta3","beta4", "v", "sdv", "resid", "Captures.pred")
```

```
ResulDef
```

```
## Inference for Bugs model at "C:/Users/celia/AppData/Local/Temp/RtmpAXk7nM/model15d832377890.txt", fi
##  3 chains, each with 50000 iterations (first 25000 discarded), n.thin = 75
##  n.sims = 1002 iterations saved
##                          mean     sd    2.5%     25%     50%     75%   97.5%
## beta0                     1.8    0.1     1.6     1.8     1.8     1.9     2.0
## beta1                     0.0    0.0     0.0     0.0     0.0     0.0     0.0
## beta2                     0.2    0.0     0.2     0.2     0.2     0.2     0.2
## beta3                     0.4    0.0     0.3     0.4     0.4     0.4     0.4
## beta4                     0.3    0.0     0.3     0.3     0.3     0.3     0.3
## v[1]                      0.4    0.1     0.1     0.3     0.4     0.4     0.6
## v[2]                     -0.2    0.1    -0.4    -0.2    -0.2    -0.1     0.1
## v[3]                     -0.3    0.1    -0.5    -0.3    -0.3    -0.2    -0.1
## v[4]                     -0.3    0.1    -0.5    -0.4    -0.3    -0.2    -0.1
## v[5]                     -0.1    0.1    -0.4    -0.2    -0.1    -0.1     0.1
## v[6]                      0.0    0.1    -0.2    -0.1     0.0     0.1     0.2
## v[7]                      0.1    0.1    -0.1     0.1     0.1     0.2     0.4
## v[8]                      0.0    0.1    -0.2     0.0     0.0     0.1     0.2
## v[9]                     -0.3    0.1    -0.6    -0.4    -0.3    -0.3    -0.1
## v[10]                    -0.4    0.1    -0.6    -0.4    -0.4    -0.3    -0.1
## v[11]                     0.7    0.1     0.5     0.6     0.7     0.7     0.9
## v[12]                     0.0    0.1    -0.2     0.0     0.0     0.1     0.3
## v[13]                     0.5    0.1     0.3     0.5     0.5     0.6     0.8
## v[14]                    -0.1    0.1    -0.3    -0.2    -0.1     0.0     0.1
## sdv                       0.4    0.1     0.2     0.3     0.4     0.4     0.6
## resid[1,1]               30.4   25.7     1.0    10.8    25.0    36.0   100.0
## resid[1,2]               30.6   25.2     1.0     9.0    25.0    49.0   100.0
## resid[1,3]               74.8   52.5     9.0    36.0    64.0   100.0   196.0
## resid[1,4]              150.0   87.0    36.0    81.0   121.0   196.0   361.0
## resid[1,5]               89.2   58.8    16.0    49.0    81.0   121.0   255.2
## resid[1,6]              100.2   63.4    16.0    49.0    81.0   144.0   256.0
## resid[1,7]               40.2   42.0     0.0     9.0    25.0    49.0   144.0
## resid[1,8]              173.1   96.5    36.0   100.0   169.0   225.0   400.0
## resid[1,9]              625.2  254.6   225.0   441.0   576.0   784.0  1225.0
## resid[1,10]            1144.5  234.4   676.0   961.0  1156.0  1296.0  1600.0
## resid[1,11]             266.8  138.9    64.0   169.0   256.0   324.0   576.0
## resid[1,12]             163.3  119.2    16.0    81.0   144.0   225.0   482.9
## resid[1,13]             455.6  241.9    81.0   289.0   400.0   576.0  1024.0
## resid[1,14]            2923.8  814.7  1600.0  2304.0  2916.0  3481.0  4624.0
```

```
## resid[1,15]           177.9  127.1    16.0    81.0   144.0   256.0   484.0
## resid[1,16]            87.7   59.5     9.0    49.0    81.0   121.0   255.2
## resid[1,17]           159.2   71.4    36.0   100.0   144.0   196.0   324.0
## resid[1,18]            15.4   20.4     0.0     1.0     9.0    25.0    64.0
## resid[1,19]           146.3   86.7    25.0    81.0   121.0   196.0   361.0
## resid[1,20]           764.7  163.0   442.0   625.0   784.0   900.0  1089.0
## resid[1,21]           178.7   99.8    49.0   100.0   169.0   225.0   400.0
## resid[1,22]           106.1   72.8     4.0    49.0   100.0   144.0   256.0
## resid[1,23]          5775.7  667.7  4489.0  5329.0  5776.0  6241.0  7056.0
## resid[1,24]          1522.2  513.8   625.0  1156.0  1444.0  1849.0  2601.0
## resid[1,25]            78.4   66.7     1.0    25.0    64.0   121.0   225.0
## resid[1,26]           155.3   91.9    25.0    81.0   144.0   196.0   361.0
## resid[1,27]            22.5   33.4     0.0     1.0     9.0    25.0   121.0
## resid[1,28]          7068.1  780.6  5476.0  6561.0  7056.0  7569.0  8649.0
## resid[1,29]           881.9  333.2   324.9   625.0   841.0  1089.0  1681.0
## resid[1,30]           270.2  142.8    64.0   169.0   256.0   361.0   625.0
## resid[1,31]            29.0   29.6     0.0     9.0    16.0    36.0   121.0
## resid[1,32]           130.7   80.2    16.0    64.0   121.0   169.0   324.0
## resid[1,33]          1268.3  247.8   841.0  1089.0  1296.0  1444.0  1764.0
## resid[1,34]           294.5  148.2    81.0   196.0   256.0   361.0   674.7
## resid[1,35]            67.2   50.8     1.0    25.0    64.0   100.0   196.0
## resid[2,1]             13.4   13.8     0.0     4.0     9.0    16.0    49.0
## resid[2,2]             12.5   14.4     0.0     4.0     9.0    16.0    49.0
## resid[2,3]             42.9   33.0     4.0    16.0    36.0    64.0   121.0
## resid[2,4]             32.0   27.4     1.0    16.0    25.0    49.0   100.0
## resid[2,5]             32.7   28.2     1.0    16.0    25.0    49.0   100.0
## resid[2,6]             28.5   28.9     0.0     9.0    16.0    36.0   100.0
## resid[2,7]              8.2   11.3     0.0     1.0     4.0     9.0    36.0
## resid[2,8]             95.7   61.4    16.0    49.0    81.0   121.0   256.0
## resid[2,9]            136.9   81.5    25.0    81.0   121.0   169.0   324.0
## resid[2,10]            22.2   29.1     0.0     4.0     9.0    25.0   100.0
## resid[2,11]           137.2   82.7    25.0    81.0   121.0   169.0   361.0
## resid[2,12]            40.4   48.1     0.0     9.0    25.0    49.0   169.0
## resid[2,13]           256.5  218.5     1.0   100.0   196.0   361.0   841.0
## resid[2,14]           160.3   92.3    36.0   100.0   144.0   225.0   361.0
## resid[2,15]           546.2  227.6   196.0   400.0   484.0   676.0  1089.0
## resid[2,16]            10.2   11.6     0.0     1.0     4.0    16.0    36.0
## resid[2,17]            60.2   44.4     1.0    25.0    49.0    81.0   169.0
## resid[2,18]           719.1  182.6   400.0   576.0   729.0   841.0  1089.0
## resid[2,19]            46.5   36.9     4.0    18.2    36.0    64.0   144.0
## resid[2,20]            52.6   46.0     1.0    16.0    42.5    64.0   169.0
## resid[2,21]            52.7   50.5     1.0    16.0    36.0    81.0   196.0
## resid[2,22]           110.1   68.2     4.1    64.0   100.0   144.0   256.0
## resid[2,23]          4901.9 1149.5  2916.0  4096.0  4900.0  5625.0  7225.0
## resid[2,24]           392.5  184.5   121.0   256.0   361.0   484.0   784.0
## resid[2,25]           509.2  225.8   196.0   324.0   484.0   625.0  1024.0
## resid[2,26]            16.7   22.2     0.0     1.0     9.0    25.0    81.0
## resid[2,27]            50.4   49.6     0.0    16.0    36.0    81.0   169.0
## resid[2,28]          7512.4  834.6  5929.0  6889.0  7569.0  8100.0  9211.2
## resid[2,29]           121.1   72.2    25.0    64.0   100.0   144.0   289.0
## resid[2,30]           354.0  167.7   100.0   225.0   324.0   441.0   729.0
## resid[2,31]            27.1   24.5     0.0     9.0    25.0    36.0   100.0
## resid[2,32]            15.0   19.6     0.0     1.0     9.0    25.0    64.0
## resid[2,33]             8.8   13.2     0.0     1.0     4.0     9.0    49.0
```

```
## resid[2,34]            28.8   32.0     0.0     9.0    16.0    36.0   121.0
## resid[2,35]           486.1  208.1   169.0   324.0   441.0   625.0   961.0
## resid[3,1]             16.3   15.9     1.0     4.0     9.0    25.0    49.0
## resid[3,2]             15.8   15.7     0.0     4.0     9.0    25.0    64.0
## resid[3,3]             25.5   24.5     1.0     9.0    16.0    36.0   100.0
## resid[3,4]             24.6   22.7     1.0     9.0    16.0    36.0    81.0
## resid[3,5]             16.4   16.3     0.0     4.0     9.0    25.0    64.0
## resid[3,6]             30.5   31.1     1.0     9.0    25.0    49.0   100.0
## resid[3,7]             10.1   11.6     0.0     1.0     4.0    16.0    36.0
## resid[3,8]             83.2   53.3     9.0    49.0    64.0   121.0   225.0
## resid[3,9]             92.3   60.6    16.0    49.0    81.0   121.0   225.0
## resid[3,10]            10.7   17.1     0.0     1.0     4.0    16.0    64.0
## resid[3,11]           210.1  115.4    49.0   121.0   196.0   289.0   484.0
## resid[3,12]            66.6   55.0     1.0    25.0    49.0   100.0   196.0
## resid[3,13]            52.3   68.6     0.0     9.0    25.0    81.0   256.0
## resid[3,14]           113.1   67.2    16.2    64.0   100.0   144.0   256.0
## resid[3,15]            57.4   42.4     4.0    25.0    49.0    81.0   169.0
## resid[3,16]            12.9   19.6     0.0     1.0     4.0    16.0    81.0
## resid[3,17]           702.2  136.1   441.0   625.0   676.0   784.0   961.0
## resid[3,18]            64.5   55.2     4.0    25.0    49.0    81.0   196.0
## resid[3,19]            12.7   16.5     0.0     1.0     9.0    16.0    63.6
## resid[3,20]            16.1   15.9     0.0     4.0     9.0    25.0    64.0
## resid[3,21]           146.5   82.8    25.0    81.0   144.0   196.0   361.0
## resid[3,22]           928.6  213.8   529.0   784.0   961.0  1089.0  1369.0
## resid[3,23]          7362.7 1109.7  5184.0  6561.0  7396.0  8100.0  9409.0
## resid[3,24]           196.6  120.6    25.2   100.0   169.0   256.0   484.0
## resid[3,25]            43.8   33.1     4.0    16.0    36.0    64.0   121.0
## resid[3,26]           129.5   76.0    25.0    81.0   121.0   169.0   324.0
## resid[3,27]            12.8   16.6     0.0     1.0     9.0    16.0    64.0
## resid[3,28]           302.7  140.7    64.0   196.0   289.0   400.0   576.0
## resid[3,29]           100.1   65.9    16.0    49.0    81.0   144.0   256.0
## resid[3,30]            70.0   48.1     9.0    36.0    64.0   100.0   196.0
## resid[3,31]           307.5   79.1   144.0   256.0   324.0   361.0   441.0
## resid[3,32]             6.2    9.2     0.0     1.0     4.0     9.0    25.0
## resid[3,33]            63.4   50.8     4.0    25.0    49.0    81.0   196.0
## resid[3,34]            44.0   32.4     4.0    25.0    36.0    64.0   121.0
## resid[3,35]            34.2   29.3     1.0    16.0    25.0    49.0   100.0
## resid[4,1]             35.8   28.4     4.0    16.0    25.0    49.0   100.0
## resid[4,2]             25.3   22.3     1.0     9.0    16.0    36.0    81.0
## resid[4,3]             25.3   20.9     1.0     9.0    25.0    36.0    81.0
## resid[4,4]             14.3   14.3     0.0     4.0     9.0    16.0    49.0
## resid[4,5]             12.2   13.7     0.0     4.0     9.0    16.0    49.0
## resid[4,6]             14.6   21.5     0.0     1.0     9.0    16.0    64.0
## resid[4,7]             24.7   25.3     0.0     4.0    16.0    36.0    81.0
## resid[4,8]             76.8   51.9     9.0    36.0    64.0   100.0   225.0
## resid[4,9]             20.6   26.1     0.0     4.0     9.0    25.0    81.0
## resid[4,10]             7.4   11.9     0.0     1.0     4.0     9.0    36.0
## resid[4,11]           236.7  113.7    49.0   144.0   225.0   324.0   484.0
## resid[4,12]           420.1  167.9   121.0   289.0   400.0   529.0   784.0
## resid[4,13]           118.1   91.1     4.1    49.0   100.0   169.0   324.0
## resid[4,14]            65.8   46.6     9.0    36.0    49.0    81.0   169.0
## resid[4,15]            53.1   36.9     9.0    25.0    49.0    76.4   144.0
## resid[4,16]            13.4   15.4     0.0     1.0     9.0    16.0    49.0
## resid[4,17]           271.8   95.0   100.0   196.0   256.0   324.0   441.0
```

```
## resid[4,18]           103.8   67.2    16.0    49.0    81.0   144.0   288.1
## resid[4,19]            16.9   17.4     0.0     4.0    12.5    25.0    49.0
## resid[4,20]             6.6    9.4     0.0     1.0     4.0     9.0    36.0
## resid[4,21]            51.4   56.6     0.0     9.0    36.0    81.0   196.0
## resid[4,22]         21862.5 1674.3 18500.0 20740.0 21900.0 23024.6 25272.0
## resid[4,23]          2783.6  839.5  1444.0  2209.0  2704.0  3249.0  4624.0
## resid[4,24]            56.8   41.2     4.0    25.0    49.0    81.0   169.0
## resid[4,25]            34.9   27.8     1.0    16.0    25.0    49.0   100.0
## resid[4,26]          1955.6  401.9  1225.0  1681.0  1936.0  2209.0  2809.0
## resid[4,27]          3428.2  729.3  2116.0  2916.0  3364.0  3844.0  4900.0
## resid[4,28]         15659.9 3090.5 10000.0 13460.0 15380.0 17690.0 21900.0
## resid[4,29]           144.8   87.0    25.0    81.0   121.0   196.0   361.0
## resid[4,30]            56.0   43.1     4.0    25.0    49.0    81.0   169.0
## resid[4,31]            26.1   24.1     0.0     9.0    16.0    36.0    81.0
## resid[4,32]             9.0   11.9     0.0     1.0     4.0    16.0    36.0
## resid[4,33]            56.9   42.0     4.0    25.0    49.0    81.0   169.0
## resid[4,34]            27.7   26.1     1.0     9.0    25.0    36.0   100.0
## resid[4,35]            29.4   24.2     1.0     9.0    25.0    36.0    99.5
## resid[5,1]             26.0   23.0     1.0     9.0    16.0    36.0    81.0
## resid[5,2]             26.3   23.0     1.0     9.0    25.0    36.0    81.0
## resid[5,3]             50.1   37.9     4.0    25.0    36.0    64.0   144.0
## resid[5,4]             20.6   19.9     1.0     9.0    16.0    25.0    64.0
## resid[5,5]             21.6   20.7     1.0     9.0    16.0    25.0    81.0
## resid[5,6]              8.1   11.7     0.0     1.0     4.0     9.0    36.0
## resid[5,7]             78.9   54.9     9.0    36.0    64.0   100.0   225.0
## resid[5,8]            227.6  120.9    64.0   144.0   196.0   289.0   529.0
## resid[5,9]             40.6   31.5     4.0    16.0    36.0    49.0   121.0
## resid[5,10]          1175.5  193.9   784.0  1024.0  1156.0  1296.0  1521.0
## resid[5,11]            78.4   61.2     4.0    36.0    64.0   100.0   225.0
## resid[5,12]            93.4   75.7     1.0    36.0    81.0   121.0   288.2
## resid[5,13]           292.8  151.5    81.0   169.0   256.0   361.0   625.0
## resid[5,14]            71.6   49.4     9.0    36.0    64.0   100.0   196.0
## resid[5,15]            64.9   44.4     9.0    36.0    49.0    81.0   169.0
## resid[5,16]           219.7   79.0    64.0   169.0   225.0   289.0   361.0
## resid[5,17]            61.4   45.4     4.0    25.0    49.0    81.0   169.0
## resid[5,18]            96.0   62.8    16.0    49.0    81.0   121.0   256.0
## resid[5,19]            16.9   17.0     1.0     4.0     9.0    25.0    64.0
## resid[5,20]          1552.0  149.9  1296.0  1444.0  1600.0  1681.0  1849.0
## resid[5,21]           129.0   76.7    25.0    81.0   121.0   169.0   324.0
## resid[5,22]          7297.7  713.6  5929.0  6724.0  7225.0  7744.0  8649.0
## resid[5,23]           598.4  255.9   196.0   400.0   576.0   784.0  1156.0
## resid[5,24]            41.2   33.0     4.0    16.0    36.0    49.0   121.0
## resid[5,25]            34.4   28.6     1.0    16.0    25.0    49.0   100.0
## resid[5,26]            78.7   55.1     1.0    36.0    64.0   121.0   225.0
## resid[5,27]           233.7  131.6    36.0   144.0   225.0   324.0   529.0
## resid[5,28]          1087.6  410.7   441.0   797.9  1024.0  1296.0  2116.0
## resid[5,29]           117.6   77.5    16.0    64.0   100.0   169.0   324.0
## resid[5,30]            57.9   46.3     4.0    25.0    49.0    81.0   169.0
## resid[5,31]            17.4   16.0     0.0     4.0    16.0    25.0    64.0
## resid[5,32]            32.3   32.2     1.0     9.0    25.0    49.0   120.5
## resid[5,33]          1059.0  205.9   625.0   961.0  1089.0  1225.0  1444.0
## resid[5,34]            31.8   26.3     1.0    16.0    25.0    49.0   100.0
## resid[5,35]            34.0   28.2     1.0    16.0    25.0    49.0   121.0
## resid[6,1]             47.3   36.9     4.0    25.0    36.0    64.0   144.0
```

```
## resid[6,2]              46.1   34.5     4.0    25.0    36.0    64.0   144.0
## resid[6,3]              27.9   25.6     1.0     9.0    25.0    36.0   100.0
## resid[6,4]              24.3   21.3     1.0     9.0    16.0    36.0    81.0
## resid[6,5]              49.9   38.6     4.0    25.0    36.0    64.0   144.0
## resid[6,6]              12.1   19.3     0.0     1.0     4.0    16.0    64.0
## resid[6,7]             108.1   67.3    16.0    64.0   100.0   144.0   256.0
## resid[6,8]             184.9   78.2    49.0   121.0   169.0   225.0   361.0
## resid[6,9]              27.5   29.3     0.0     9.0    16.0    36.0   120.5
## resid[6,10]           1513.9  278.2   961.0  1296.0  1521.0  1681.0  2025.0
## resid[6,11]            105.8   90.1     1.0    36.0    81.0   144.0   360.1
## resid[6,12]            282.1  153.4    64.0   169.0   256.0   361.0   625.0
## resid[6,13]            201.5  107.8    49.0   121.0   196.0   256.0   482.9
## resid[6,14]            117.2   72.3    25.0    64.0   100.0   144.0   323.1
## resid[6,15]           1177.5  308.8   576.0   961.0  1156.0  1369.0  1849.0
## resid[6,16]             13.4   16.3     0.0     1.0     9.0    16.0    64.0
## resid[6,17]             98.4   59.0    16.0    49.0    81.0   121.0   256.0
## resid[6,18]            480.8  132.7   256.0   400.0   484.0   576.0   729.0
## resid[6,19]             26.8   23.5     1.0     9.0    25.0    36.0   100.0
## resid[6,20]           1022.8  300.9   441.0   841.0  1024.0  1225.0  1600.0
## resid[6,21]           2576.6  885.4  1024.0  1936.0  2500.0  3220.4  4356.0
## resid[6,22]             52.5   63.0     0.0     9.0    25.0    81.0   225.0
## resid[6,23]            178.6   92.6    36.0   100.0   169.0   225.0   400.0
## resid[6,24]             64.4   45.2     9.0    36.0    49.0    81.0   169.0
## resid[6,25]            542.8  331.5   100.0   289.0   484.0   729.0  1369.0
## resid[6,26]            101.7  135.8     0.0     9.0    49.0   144.0   484.0
## resid[6,27]            450.1  271.5    81.0   256.0   400.0   625.0  1089.0
## resid[6,28]            151.2   88.8    25.0    81.0   144.0   196.0   361.0
## resid[6,29]             97.6   61.4    16.0    49.0    81.0   121.0   256.0
## resid[6,30]             32.0   43.3     0.0     4.0    16.0    49.0   144.0
## resid[6,31]             20.1   23.7     0.0     4.0    16.0    25.0    81.0
## resid[6,32]             74.2   52.6     9.0    36.0    64.0   100.0   196.0
## resid[6,33]             63.0   45.9     9.0    36.0    49.0    81.0   169.0
## resid[6,34]             53.4   40.3     4.0    25.0    49.0    64.0   144.0
## resid[6,35]            379.8  266.0    16.0   169.0   324.0   529.0   961.0
## resid[7,1]              55.4   40.0     9.0    25.0    49.0    81.0   144.0
## resid[7,2]              66.3   46.9     9.0    36.0    49.0   100.0   169.0
## resid[7,3]              27.2   26.9     1.0     9.0    16.0    36.0   100.0
## resid[7,4]              28.9   24.3     1.0     9.0    25.0    36.0   100.0
## resid[7,5]              55.1   38.0     4.0    25.0    49.0    81.0   144.0
## resid[7,6]             131.8   82.5    25.0    64.0   121.0   169.0   324.0
## resid[7,7]             204.3  107.4    49.0   121.0   196.0   256.0   484.0
## resid[7,8]              87.2   61.4     9.0    49.0    81.0   121.0   225.0
## resid[7,9]               8.2   13.4     0.0     1.0     4.0     9.0    49.0
## resid[7,10]           6774.5  514.6  5776.0  6400.0  6724.0  7225.0  7744.0
## resid[7,11]            493.3  232.6   121.0   324.0   441.0   625.0  1024.0
## resid[7,12]            578.5  254.5   196.7   400.0   529.0   729.0  1156.0
## resid[7,13]            351.9  170.9   100.0   225.0   324.0   441.0   729.0
## resid[7,14]            177.3  101.1    36.0   100.0   169.0   225.0   441.0
## resid[7,15]           1354.5  320.4   729.0  1156.0  1369.0  1521.0  1936.0
## resid[7,16]             60.9   58.1     1.0    16.0    49.0    81.0   225.0
## resid[7,17]            200.9  112.1    49.0   121.0   169.0   256.0   482.9
## resid[7,18]            108.9   67.7    16.0    64.0   100.0   144.0   289.0
## resid[7,19]             17.1   18.5     0.0     4.0     9.0    25.0    64.0
## resid[7,20]             30.6   23.9     0.0     9.0    25.0    49.0    81.0
```

```
## resid[7,21]          11265.8 1527.2  8281.0 10200.0 11240.0 12320.0 14160.0
## resid[7,22]           1119.3  394.4   484.0   841.0  1089.0  1369.0  2025.0
## resid[7,23]            687.6  284.8   256.0   484.0   625.0   841.0  1296.0
## resid[7,24]             97.4   60.9    16.0    49.0    81.0   121.0   256.0
## resid[7,25]             15.8   22.4     0.0     1.0     9.0    25.0    81.0
## resid[7,26]           2124.8  866.3   784.0  1521.0  2025.0  2601.0  4096.0
## resid[7,27]           2403.1  721.1  1296.0  1936.0  2304.0  2809.0  4096.0
## resid[7,28]            441.5  203.3   144.0   289.0   400.0   576.0   900.0
## resid[7,29]            112.7   71.8    16.0    64.0   100.0   144.0   289.0
## resid[7,30]           1430.9  305.7   841.0  1225.0  1444.0  1600.0  2025.0
## resid[7,31]            111.9   70.3    16.0    64.0   100.0   144.0   289.0
## resid[7,32]             46.1   48.0     0.0     9.0    36.0    64.0   169.0
## resid[7,33]             61.3   54.6     1.0    16.0    49.0    81.0   196.0
## resid[7,34]             72.1   48.7     9.0    36.0    64.0   100.0   196.0
## resid[7,35]           2022.2  251.1  1521.0  1849.0  2025.0  2209.0  2500.0
## resid[8,1]              75.4   52.4     9.0    36.0    64.0   100.0   196.0
## resid[8,2]              24.3   24.2     1.0     9.0    16.0    36.0    81.0
## resid[8,3]              21.7   19.3     1.0     9.0    16.0    36.0    64.0
## resid[8,4]              22.4   20.6     1.0     9.0    16.0    36.0    81.0
## resid[8,5]              49.7   36.9     4.0    25.0    36.0    64.0   144.0
## resid[8,6]             230.4  118.6    49.0   144.0   225.0   289.0   484.0
## resid[8,7]              14.4   22.3     0.0     1.0     9.0    16.0    81.0
## resid[8,8]              39.2   27.7     1.0    16.0    36.0    49.0   100.0
## resid[8,9]              99.4   53.9     9.0    64.0   100.0   144.0   224.3
## resid[8,10]            845.9  185.5   484.0   729.0   841.0   961.0  1225.0
## resid[8,11]            452.8  262.9   100.0   256.0   400.0   576.0  1156.0
## resid[8,12]            107.2   82.3     4.0    49.0    81.0   144.0   324.0
## resid[8,13]            110.8   70.4    16.0    64.0   100.0   144.0   289.0
## resid[8,14]            127.0   76.1    25.0    64.0   121.0   169.0   289.0
## resid[8,15]             79.3   66.0     1.0    25.0    64.0   121.0   225.0
## resid[8,16]            285.9  142.1    81.0   175.4   256.0   361.0   625.0
## resid[8,17]            666.3  163.1   361.0   529.0   676.0   784.0   961.0
## resid[8,18]             22.0   21.4     1.0     9.0    16.0    25.0    81.0
## resid[8,19]              5.1    6.8     0.0     1.0     4.0     9.0    25.0
## resid[8,20]             20.8   22.2     0.0     4.0    16.0    25.0    81.0
## resid[8,21]            903.4  435.9   256.0   576.0   841.0  1156.0  1936.0
## resid[8,22]             73.0   57.2     4.0    36.0    64.0   100.0   225.0
## resid[8,23]             70.9   47.3     9.0    36.0    64.0   100.0   196.0
## resid[8,24]             11.1   16.6     0.0     1.0     4.0    16.0    64.0
## resid[8,25]           1082.9  228.3   676.0   900.0  1089.0  1225.0  1521.0
## resid[8,26]           2706.0  989.7   961.0  2025.0  2601.0  3249.0  5041.0
## resid[8,27]             20.7   33.4     0.0     1.0     9.0    25.0   121.0
## resid[8,28]            101.1   66.6    16.0    49.0    81.0   144.0   256.0
## resid[8,29]             67.8   53.7     4.0    25.0    49.0   100.0   196.0
## resid[8,30]            159.0  219.6     0.0    16.0    81.0   225.0   839.6
## resid[8,31]           6044.3 1509.7  3481.0  5041.0  5929.0  7056.0  9404.1
## resid[8,32]          21290.7  812.4 19600.0 20740.0 21320.0 21900.0 22800.0
## resid[8,33]             52.1   38.5     4.0    25.0    49.0    64.0   144.0
## resid[8,34]             80.0   45.8     9.0    49.0    81.0   121.0   169.0
## resid[8,35]           3600.6  387.8  2809.0  3364.0  3600.0  3844.0  4356.0
## resid[9,1]              18.2   18.5     1.0     4.0    16.0    25.0    64.0
## resid[9,2]              10.6   13.3     0.0     1.0     4.0    16.0    49.0
## resid[9,3]              13.2   13.6     0.0     4.0     9.0    16.0    49.0
## resid[9,4]               7.6   10.8     0.0     1.0     4.0     9.0    36.0
```

```
## resid[9,5]             541.2  232.5   196.0   361.0   484.0   676.0  1089.0
## resid[9,6]              64.0   47.9     9.0    27.4    49.0    81.0   195.3
## resid[9,7]              77.2   55.0     9.0    36.0    64.0   100.0   224.2
## resid[9,8]             121.5   53.1    25.0    81.0   121.0   144.0   225.0
## resid[9,9]             238.8  109.5    49.0   169.0   225.0   324.0   484.0
## resid[9,10]           1262.1  200.0   900.0  1156.0  1225.0  1369.0  1681.0
## resid[9,11]            156.7   94.1    25.0    81.0   144.0   196.0   400.0
## resid[9,12]            473.5  212.6   144.0   324.0   441.0   576.0   961.0
## resid[9,13]             38.8   37.3     1.0     9.0    25.0    49.0   143.4
## resid[9,14]            669.9  167.9   361.0   576.0   676.0   784.0   961.0
## resid[9,15]            267.7  133.3    49.0   169.0   256.0   361.0   529.0
## resid[9,16]             58.4   42.5     4.0    25.0    49.0    81.0   169.0
## resid[9,17]             62.2   52.4     1.0    25.0    49.0    81.0   196.0
## resid[9,18]             11.8   16.3     0.0     1.0     4.0    16.0    63.6
## resid[9,19]            117.6   43.3    36.0    81.0   121.0   144.0   196.0
## resid[9,20]             30.3   23.3     0.0     9.0    25.0    49.0    81.0
## resid[9,21]           1133.1  386.7   484.0   841.0  1089.0  1369.0  2025.0
## resid[9,22]            470.0  210.1   144.0   324.0   441.0   576.0   961.0
## resid[9,23]              9.0   13.4     0.0     1.0     4.0     9.0    49.0
## resid[9,24]            316.5  111.7   121.0   225.0   324.0   400.0   529.0
## resid[9,25]           2309.3  364.8  1600.0  2025.0  2304.0  2500.0  3025.0
## resid[9,26]          12975.2 2872.5  8281.0 11030.0 12770.0 14640.0 19040.0
## resid[9,27]            393.6  194.2   100.5   256.0   361.0   484.0   841.0
## resid[9,28]             97.0   62.7    16.0    49.0    81.0   121.0   256.0
## resid[9,29]           2479.7  377.4  1764.0  2209.0  2500.0  2704.0  3249.0
## resid[9,30]            665.5  173.2   324.0   529.0   676.0   784.0  1024.0
## resid[9,31]             72.6   52.1     9.0    36.0    64.0   100.0   196.0
## resid[9,32]             12.1   19.1     0.0     1.0     4.0    16.0    64.0
## resid[9,33]             50.1   37.6     4.0    25.0    36.0    64.0   144.0
## resid[9,34]            452.9  104.9   256.0   361.0   441.0   529.0   676.0
## resid[9,35]           1363.6  232.9   900.0  1225.0  1369.0  1521.0  1764.0
## resid[10,1]             12.6   14.9     0.0     4.0     9.0    16.0    49.0
## resid[10,2]              5.8    8.9     0.0     1.0     4.0     9.0    25.0
## resid[10,3]             16.9   17.1     0.0     4.0    16.0    25.0    64.0
## resid[10,4]             17.1   17.3     1.0     4.0     9.0    25.0    64.0
## resid[10,5]             35.9   28.9     1.0    16.0    25.0    49.0   121.0
## resid[10,6]             30.6   28.0     1.0     9.0    25.0    49.0   100.0
## resid[10,7]             28.9   25.4     1.0     9.0    25.0    36.0    99.5
## resid[10,8]            540.5  110.0   324.0   484.0   529.0   625.0   729.0
## resid[10,9]              8.7   11.6     0.0     1.0     4.0     9.0    36.0
## resid[10,10]            72.0   49.7     9.0    36.0    64.0   100.0   196.0
## resid[10,11]            79.5   55.7     9.0    36.0    64.0   100.0   225.0
## resid[10,12]            63.4   45.0     9.0    25.0    49.0    81.0   169.0
## resid[10,13]           114.4   71.4    16.2    64.0   100.0   144.0   256.0
## resid[10,14]           438.8  137.9   169.0   324.0   441.0   529.0   729.0
## resid[10,15]           178.7  128.2    16.0    81.0   144.0   256.0   484.0
## resid[10,16]            41.7   34.1     4.0    16.0    36.0    64.0   121.0
## resid[10,17]            20.6   15.5     0.0     9.0    16.0    36.0    49.0
## resid[10,18]           189.2   62.2    64.0   144.0   196.0   225.0   324.0
## resid[10,19]            13.8   15.6     0.0     4.0     9.0    16.0    63.6
## resid[10,20]            55.0   42.7     4.0    25.0    49.0    81.0   169.0
## resid[10,21]           128.5   77.4    25.0    81.0   121.0   169.0   324.0
## resid[10,22]            49.9   39.0     4.0    25.0    36.0    64.0   144.0
## resid[10,23]            43.9   35.7     1.0    16.0    36.0    64.0   144.0
```

```
## resid[10,24]          15.9   24.9     0.0     1.0     9.0    25.0    81.0
## resid[10,25]        1379.8  311.3   784.0  1156.0  1369.0  1600.0  2025.0
## resid[10,26]         205.3  114.2    49.0   121.0   196.0   256.0   484.0
## resid[10,27]          46.5   35.7     4.0    16.0    36.0    64.0   144.0
## resid[10,28]          72.0   52.9     4.0    36.0    64.0   100.0   196.0
## resid[10,29]        5177.7  437.8  4228.2  4900.0  5184.0  5476.0  5929.0
## resid[10,30]          99.5   66.3    16.0    49.0    81.0   138.2   256.0
## resid[10,31]         309.2  162.3    64.0   196.0   289.0   400.0   676.0
## resid[10,32]          11.3   14.0     0.0     1.0     9.0    16.0    49.0
## resid[10,33]           8.2   12.1     0.0     1.0     4.0     9.0    36.0
## resid[10,34]          56.0   42.6     4.0    25.0    49.0    81.0   169.0
## resid[10,35]          37.2   37.9     1.0     9.0    25.0    49.0   144.0
## resid[11,1]           25.7   27.7     0.0     4.0    16.0    36.0   100.0
## resid[11,2]           35.5   32.6     1.0    16.0    25.0    49.0   121.0
## resid[11,3]          200.9  110.8    49.0   121.0   169.0   256.0   482.9
## resid[11,4]          198.9  110.2    49.0   121.0   196.0   256.0   441.0
## resid[11,5]          742.7  291.0   289.0   529.0   729.0   900.0  1369.0
## resid[11,6]          234.1  119.1    64.0   144.0   225.0   289.0   527.8
## resid[11,7]          173.1   92.7    36.0   100.0   169.0   225.0   400.0
## resid[11,8]        12158.1 1534.7  9216.0 11240.0 12100.0 13230.0 15130.0
## resid[11,9]         4204.9  555.3  3136.0  3844.0  4225.0  4624.0  5329.0
## resid[11,10]         566.2  242.2   196.0   400.0   529.0   729.0  1156.0
## resid[11,11]         505.7  210.6   169.0   361.0   484.0   625.0   961.0
## resid[11,12]         461.8  207.4   144.0   324.0   441.0   576.0   961.0
## resid[11,13]          63.9   76.3     0.0     9.0    36.0   100.0   288.2
## resid[11,14]          56.1   72.0     0.0     9.0    25.0    81.0   256.0
## resid[11,15]        1736.1  569.1   841.0  1369.0  1681.0  2116.0  2916.0
## resid[11,16]         155.3   92.0    36.0   100.0   144.0   196.0   399.0
## resid[11,17]         138.0   84.1    25.0    81.0   121.0   169.0   361.0
## resid[11,18]          21.2   29.0     0.0     1.0     9.0    25.0   100.0
## resid[11,19]         142.6   89.7    25.0    81.0   121.0   196.0   361.0
## resid[11,20]         238.3  134.0    49.0   144.0   225.0   324.0   576.0
## resid[11,21]         343.4  156.3   100.0   225.0   324.0   441.0   727.6
## resid[11,22]         318.8  152.2   100.0   225.0   289.0   400.0   676.0
## resid[11,23]         189.4  167.3     1.0    64.0   144.0   256.0   625.0
## resid[11,24]        1282.3  458.9   484.0   961.0  1296.0  1600.0  2304.0
## resid[11,25]        1043.5  370.2   441.0   784.0  1024.0  1225.0  1849.0
## resid[11,26]         319.2  152.2    81.4   196.0   289.0   400.0   676.0
## resid[11,27]         297.6  147.0    81.0   196.0   289.0   389.9   625.0
## resid[11,28]       12993.3 2033.2  9029.7 11660.0 13000.0 14400.0 16900.0
## resid[11,29]        4666.7  998.5  2809.0  3969.0  4624.0  5329.0  6719.9
## resid[11,30]        1041.7  368.1   441.0   784.0  1024.0  1296.0  1849.0
## resid[11,31]         251.2  127.5    64.0   169.0   225.0   324.0   574.8
## resid[11,32]          88.8   59.6    16.0    49.0    81.0   121.0   225.0
## resid[11,33]          30.0   45.9     0.0     4.0    16.0    36.0   144.0
## resid[11,34]        2005.3  441.0  1156.0  1681.0  1980.0  2304.0  2916.0
## resid[11,35]         444.1  200.7   144.0   289.0   400.0   529.0   900.0
## resid[12,1]            5.9   10.5     0.0     1.0     1.0     9.0    36.0
## resid[12,2]           15.6   15.3     0.0     4.0     9.0    25.0    49.0
## resid[12,3]           36.2   29.3     1.0    16.0    25.0    49.0   121.0
## resid[12,4]           47.7   38.2     4.0    25.0    36.0    64.0   144.0
## resid[12,5]           87.5   58.3    16.0    49.0    81.0   121.0   225.0
## resid[12,6]           58.7   44.2     9.0    25.0    49.0    81.0   169.0
## resid[12,7]            9.9   15.7     0.0     1.0     4.0     9.0    49.0
```

```
## resid[12,8]          3032.1  350.0  2304.0  2809.0  3025.0  3249.0  3721.0
## resid[12,9]            93.3   59.5    16.0    49.0    81.0   121.0   225.0
## resid[12,10]          206.7  116.2    49.0   121.0   196.0   280.4   441.0
## resid[12,11]          134.3   83.0    25.0    81.0   121.0   169.0   361.0
## resid[12,12]          106.7   65.5    16.0    64.0   100.0   144.0   256.0
## resid[12,13]           64.1   56.6     1.0    25.0    49.0    81.0   196.0
## resid[12,14]          218.3  115.2    49.0   144.0   196.0   289.0   484.0
## resid[12,15]          319.2  159.9   100.0   196.0   289.0   400.0   676.0
## resid[12,16]           40.7   33.6     4.0    16.0    36.0    49.0   121.0
## resid[12,17]         1529.9  193.4  1156.0  1444.0  1521.0  1681.0  1849.0
## resid[12,18]           31.7   24.3     1.0    16.0    25.0    49.0    81.0
## resid[12,19]           58.3   40.3     9.0    25.0    49.0    81.0   169.0
## resid[12,20]           82.3   55.7     9.0    36.0    64.0   121.0   225.0
## resid[12,21]           76.3   51.9     9.0    36.0    64.0   100.0   196.0
## resid[12,22]           81.2   56.0     9.0    36.0    64.0   100.0   225.0
## resid[12,23]           23.4   26.6     0.0     4.0    16.0    36.0   100.0
## resid[12,24]          598.4  189.6   256.0   484.0   576.0   729.0   961.0
## resid[12,25]          222.1  119.8    49.0   144.0   196.0   289.0   529.0
## resid[12,26]           68.6   49.8     9.0    36.0    49.0   100.0   196.0
## resid[12,27]           72.7   51.7     9.0    36.0    64.0   100.0   196.0
## resid[12,28]          969.1  230.0   529.0   841.0   961.0  1089.0  1444.0
## resid[12,29]           14.2   22.1     0.0     1.0     4.0    16.0    80.6
## resid[12,30]          596.7  256.3   225.0   400.0   576.0   729.0  1156.0
## resid[12,31]           27.1   22.9     1.0     9.0    25.0    36.0    81.0
## resid[12,32]         4362.9  298.8  3721.0  4225.0  4356.0  4624.0  4900.0
## resid[12,33]           15.1   18.2     0.0     4.0     9.0    25.0    64.0
## resid[12,34]           12.2   17.3     0.0     1.0     4.0    16.0    63.6
## resid[12,35]          142.5   82.2    25.0    81.0   121.0   196.0   324.0
## resid[13,1]            22.5   25.2     0.0     4.0    16.0    36.0   100.0
## resid[13,2]            56.7   39.9     4.0    25.0    49.0    81.0   168.4
## resid[13,3]           104.3   66.8    16.0    49.0   100.0   144.0   256.0
## resid[13,4]           140.4   80.7    25.0    81.0   121.0   196.0   324.0
## resid[13,5]           175.8   95.6    36.0   100.0   169.0   225.0   400.0
## resid[13,6]           149.3   90.5    36.0    81.0   121.0   196.0   361.0
## resid[13,7]           242.1  123.6    64.0   144.0   225.0   324.0   529.0
## resid[13,8]          1722.1  332.5  1089.0  1521.0  1764.0  1936.0  2304.0
## resid[13,9]           297.3  145.2    81.0   196.0   289.0   361.0   625.0
## resid[13,10]          111.9   85.2     1.0    49.0   100.0   169.0   324.0
## resid[13,11]          439.1  193.0   121.0   289.0   400.0   576.0   841.0
## resid[13,12]          375.7  242.2    36.0   196.0   324.0   529.0  1022.4
## resid[13,13]           88.1  102.2     0.0    16.0    49.0   121.0   361.0
## resid[13,14]          753.0  287.9   289.0   529.0   729.0   900.0  1442.1
## resid[13,15]          469.5  201.1   169.0   324.0   441.0   576.0   900.0
## resid[13,16]          135.7   81.4    25.0    81.0   121.0   169.0   324.0
## resid[13,17]        19542.5 1297.7 16900.0 18770.0 19600.0 20450.0 22200.0
## resid[13,18]           16.7   25.4     0.0     1.0     9.0    16.0   100.0
## resid[13,19]          175.2  101.3    36.0   100.0   169.0   225.0   400.0
## resid[13,20]          110.5   70.8    16.0    64.0   100.0   144.0   289.0
## resid[13,21]          237.7  123.7    64.0   144.0   225.0   289.0   529.0
## resid[13,22]          487.6  417.9     9.0   169.0   400.0   676.0  1521.0
## resid[13,23]          916.6  426.2   225.0   576.0   900.0  1225.0  1849.0
## resid[13,24]          394.1  228.1    64.0   225.0   361.0   529.0   900.0
## resid[13,25]          385.4  177.0   121.0   256.0   361.0   484.0   784.0
## resid[13,26]          220.7  113.3    49.0   144.0   196.0   289.0   484.0
```

```
## resid[13,27]          2542.1  932.6  1089.0  1936.0  2401.0  3025.0  4624.0
## resid[13,28]         24175.9 1923.6 20450.0 22800.0 24030.0 25600.0 27890.0
## resid[13,29]           586.4  244.4   225.0   400.0   529.0   729.0  1156.0
## resid[13,30]           812.4  311.8   289.0   587.9   784.0  1024.0  1521.0
## resid[13,31]            89.4   58.5     9.0    49.0    81.0   121.0   225.0
## resid[13,32]          2416.5  560.8  1370.8  2025.0  2401.0  2809.0  3600.0
## resid[13,33]          1386.6  420.2   625.0  1089.0  1369.0  1681.0  2304.0
## resid[13,34]           713.6  282.2   289.0   529.0   676.0   884.9  1369.0
## resid[13,35]           216.3  114.4    49.0   144.0   196.0   289.0   484.0
## resid[14,1]              3.0    4.4     0.0     1.0     1.0     4.0    16.0
## resid[14,2]             23.5   21.3     1.0     9.0    16.0    36.0    81.0
## resid[14,3]             34.4   28.4     1.0    16.0    25.0    49.0   100.0
## resid[14,4]             65.6   47.0     9.0    36.0    49.0    81.0   196.0
## resid[14,5]             37.2   30.2     4.0    16.0    36.0    49.0   121.0
## resid[14,6]             37.9   31.6     1.0    16.0    25.0    49.0   121.0
## resid[14,7]             12.9   13.8     0.0     4.0     9.0    16.0    49.0
## resid[14,8]             79.4   52.1     9.0    36.0    64.0   100.0   225.0
## resid[14,9]            101.3   69.7     9.0    49.0    81.0   144.0   289.0
## resid[14,10]             8.3   11.9     0.0     1.0     4.0     9.0    36.0
## resid[14,11]           127.2   78.3    25.0    64.0   110.0   169.0   324.0
## resid[14,12]           218.1  115.1    49.0   144.0   196.0   289.0   484.0
## resid[14,13]           348.9  166.3    49.0   225.0   324.0   441.0   729.0
## resid[14,14]           292.0  148.0    81.0   169.0   256.0   361.0   625.0
## resid[14,15]           163.1   93.8    36.0   100.0   144.0   225.0   400.0
## resid[14,16]            49.0   36.9     4.0    25.0    36.0    64.0   144.0
## resid[14,17]          2054.9  237.9  1600.0  1936.0  2025.0  2209.0  2500.0
## resid[14,18]            22.8   24.7     0.0     4.0    16.0    36.0   100.0
## resid[14,19]            46.8   44.3     1.0    16.0    36.0    64.0   169.0
## resid[14,20]            46.9   36.1     4.0    16.0    36.0    64.0   144.0
## resid[14,21]            82.4   55.8     9.0    49.0    64.0   121.0   225.0
## resid[14,22]           595.2  139.1   324.0   484.0   576.0   676.0   841.0
## resid[14,23]          5268.3  609.6  4096.0  4900.0  5329.0  5776.0  6400.0
## resid[14,24]           480.8  212.3   169.0   324.0   441.0   625.0   961.0
## resid[14,25]           272.9  147.9    64.0   169.0   256.0   361.0   625.0
## resid[14,26]            56.5   44.9     4.0    25.0    49.0    81.0   169.0
## resid[14,27]            55.4   38.9     1.0    25.0    49.0    81.0   144.0
## resid[14,28]          1881.1  313.5  1225.0  1681.0  1849.0  2116.0  2401.0
## resid[14,29]           366.8  171.9   121.0   256.0   324.0   484.0   784.0
## resid[14,30]           272.0  139.5    64.0   169.0   256.0   361.0   576.0
## resid[14,31]            24.1   23.7     0.0     4.0    16.0    36.0    81.0
## resid[14,32]           221.4   64.3   100.0   169.0   225.0   256.0   361.0
## resid[14,33]           126.7   67.7    16.0    81.0   121.0   169.0   256.0
## resid[14,34]           445.9  207.5   144.0   289.0   400.0   576.0   900.0
## resid[14,35]           153.5   91.8    25.0    81.0   144.0   196.0   400.0
## Captures.pred[1,1]       5.0    2.2     1.0     3.2     5.0     6.0    10.0
## Captures.pred[1,2]       5.1    2.2     1.0     3.0     5.0     7.0    10.0
## Captures.pred[1,3]       8.1    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[1,4]      11.8    3.5     6.0     9.0    11.0    14.0    19.0
## Captures.pred[1,5]       9.0    3.0     4.0     7.0     9.0    11.0    16.0
## Captures.pred[1,6]       9.5    3.1     4.0     7.0     9.0    12.0    16.0
## Captures.pred[1,7]      10.4    3.3     5.0     8.0    10.0    12.0    17.0
## Captures.pred[1,8]      12.7    3.6     6.0    10.0    13.0    15.0    20.0
## Captures.pred[1,9]      24.5    5.1    15.0    21.0    24.0    28.0    35.0
## Captures.pred[1,10]     13.4    3.5     7.0    11.0    13.0    16.0    21.0
```

```
## Captures.pred[1,11]    15.8    4.2     8.0    13.0    16.0    18.0    24.0
## Captures.pred[1,12]    18.0    4.4    10.0    15.0    18.0    21.0    28.0
## Captures.pred[1,13]    31.6    5.7    20.0    28.0    31.0    35.0    43.0
## Captures.pred[1,14]    54.5    7.5    41.0    49.0    55.0    60.0    69.0
## Captures.pred[1,15]    22.4    4.8    14.0    19.0    22.0    26.0    32.0
## Captures.pred[1,16]     8.8    3.1     3.0     7.0     9.0    11.0    16.0
## Captures.pred[1,17]     8.7    3.0     3.0     7.0     9.0    11.0    15.0
## Captures.pred[1,18]    12.6    3.7     6.0    10.0    12.0    15.0    20.0
## Captures.pred[1,19]    11.6    3.5     5.0     9.0    11.0    14.0    19.0
## Captures.pred[1,20]     8.5    3.0     3.0     6.0     8.0    11.0    15.0
## Captures.pred[1,21]    12.9    3.7     7.0    10.0    13.0    15.0    20.0
## Captures.pred[1,22]    14.5    3.9     8.0    12.0    14.0    17.0    23.0
## Captures.pred[1,23]    19.1    4.4    11.0    16.0    19.0    22.0    28.0
## Captures.pred[1,24]    42.6    6.7    30.0    38.0    43.0    47.0    56.0
## Captures.pred[1,25]    17.2    4.2    10.0    14.0    17.0    20.0    25.0
## Captures.pred[1,26]    12.9    3.6     6.0    10.0    13.0    15.0    20.0
## Captures.pred[1,27]    13.7    3.9     7.0    11.0    13.0    16.0    22.0
## Captures.pred[1,28]    22.1    4.7    13.0    19.0    22.0    25.0    32.0
## Captures.pred[1,29]    29.2    5.6    18.0    25.0    29.0    33.0    41.0
## Captures.pred[1,30]    17.9    4.3    10.0    15.0    18.0    21.0    27.0
## Captures.pred[1,31]     6.7    2.6     2.0     5.0     6.0     8.0    13.0
## Captures.pred[1,32]    11.9    3.5     5.0     9.0    12.0    14.0    19.0
## Captures.pred[1,33]    11.6    3.5     5.0     9.0    11.0    14.0    18.0
## Captures.pred[1,34]    16.6    4.2     9.0    14.0    16.0    19.0    26.0
## Captures.pred[1,35]    11.6    3.4     5.0     9.0    11.0    14.0    19.0
## Captures.pred[2,1]      3.2    1.8     0.0     2.0     3.0     4.0     7.0
## Captures.pred[2,2]      3.9    2.0     1.0     3.0     4.0     5.0     8.0
## Captures.pred[2,3]      6.1    2.4     2.0     4.0     6.0     8.0    11.0
## Captures.pred[2,4]      5.2    2.3     1.0     4.0     5.0     7.0    10.0
## Captures.pred[2,5]      5.2    2.3     1.0     4.0     5.0     7.0    10.0
## Captures.pred[2,6]      6.7    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[2,7]      7.2    2.8     2.0     5.0     7.0     9.0    13.0
## Captures.pred[2,8]      9.3    3.0     4.0     7.0     9.0    11.0    16.0
## Captures.pred[2,9]     11.2    3.4     5.0     9.0    11.0    13.0    18.0
## Captures.pred[2,10]    11.4    3.3     5.0     9.0    11.0    13.0    18.0
## Captures.pred[2,11]    11.2    3.4     5.0     9.0    11.0    13.0    19.0
## Captures.pred[2,12]    15.0    3.9     8.0    12.0    15.0    17.0    23.0
## Captures.pred[2,13]    51.8    7.3    37.0    47.0    52.0    57.0    67.0
## Captures.pred[2,14]    12.1    3.6     6.0    10.0    12.0    15.0    19.0
## Captures.pred[2,15]    22.9    4.8    14.0    20.0    22.0    26.0    33.0
## Captures.pred[2,16]     5.9    2.4     2.0     4.0     6.0     8.0    11.0
## Captures.pred[2,17]     9.9    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[2,18]    11.4    3.5     5.0     9.0    11.0    14.0    18.0
## Captures.pred[2,19]     6.3    2.6     2.0     4.2     6.0     8.0    12.0
## Captures.pred[2,20]     8.6    3.0     3.0     6.0     8.5    10.0    15.0
## Captures.pred[2,21]    10.4    3.4     4.0     8.0    10.0    13.0    18.0
## Captures.pred[2,22]    13.1    3.5     7.0    11.0    13.0    15.0    21.0
## Captures.pred[2,23]    60.5    8.3    45.0    55.0    60.0    66.0    76.0
## Captures.pred[2,24]    20.3    4.7    12.0    17.0    20.0    23.0    29.0
## Captures.pred[2,25]    23.0    4.9    15.0    19.0    23.0    26.0    33.0
## Captures.pred[2,26]     9.7    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[2,27]    15.1    3.9     8.0    12.0    15.0    18.0    23.0
## Captures.pred[2,28]    22.5    4.8    13.0    19.0    22.0    26.0    32.0
## Captures.pred[2,29]    10.5    3.2     5.0     8.0    10.0    12.0    17.0
```

```
## Captures.pred[2,30]    18.3    4.4    10.0    15.0    18.0    21.0    27.0
## Captures.pred[2,31]     5.6    2.4     1.0     4.0     6.0     7.0    11.0
## Captures.pred[2,32]    11.5    3.6     5.0     9.0    11.0    14.0    19.0
## Captures.pred[2,33]     9.0    3.0     4.0     7.0     9.0    11.0    16.0
## Captures.pred[2,34]     7.6    2.8     3.0     6.0     7.0     9.0    14.0
## Captures.pred[2,35]    21.5    4.7    13.0    18.0    21.0    25.0    31.0
## Captures.pred[3,1]      3.6    1.9     1.0     2.0     3.0     5.0     7.0
## Captures.pred[3,2]      3.5    1.9     0.0     2.0     3.0     5.0     8.0
## Captures.pred[3,3]      4.6    2.2     1.0     3.0     4.0     6.0    10.0
## Captures.pred[3,4]      4.4    2.2     1.0     3.0     4.0     6.0     9.0
## Captures.pred[3,5]      3.6    1.9     0.0     2.0     3.0     5.0     8.0
## Captures.pred[3,6]      6.9    2.6     2.0     5.0     7.0     9.0    12.0
## Captures.pred[3,7]      6.0    2.4     2.0     4.0     6.0     8.0    11.0
## Captures.pred[3,8]      8.6    2.9     3.0     7.0     8.0    11.0    15.0
## Captures.pred[3,9]      9.1    3.0     4.0     7.0     9.0    11.0    15.0
## Captures.pred[3,10]     5.2    2.4     1.0     4.0     5.0     7.0    11.0
## Captures.pred[3,11]    14.0    3.9     7.0    11.0    14.0    17.0    22.0
## Captures.pred[3,12]    11.4    3.4     5.0     9.0    11.0    14.0    18.0
## Captures.pred[3,13]    26.1    5.1    16.0    23.0    26.0    30.0    37.0
## Captures.pred[3,14]    10.2    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[3,15]     7.1    2.7     2.0     5.0     7.0     9.0    13.0
## Captures.pred[3,16]     7.3    2.8     3.0     5.0     7.0     9.0    14.0
## Captures.pred[3,17]     6.6    2.6     2.0     5.0     7.0     8.0    12.0
## Captures.pred[3,18]    10.3    3.3     5.0     8.0    10.0    12.0    17.0
## Captures.pred[3,19]     4.8    2.2     1.0     3.0     5.0     6.0    10.0
## Captures.pred[3,20]     3.5    1.9     0.0     2.0     3.0     5.0     8.0
## Captures.pred[3,21]    11.6    3.4     5.0     9.0    12.0    14.0    19.0
## Captures.pred[3,22]    12.7    3.6     6.0    10.0    12.0    15.0    20.0
## Captures.pred[3,23]    36.4    6.5    25.0    32.0    36.0    41.0    50.0
## Captures.pred[3,24]    16.4    4.2     8.0    13.0    16.0    19.0    25.0
## Captures.pred[3,25]     6.2    2.4     2.0     4.0     6.0     8.0    11.0
## Captures.pred[3,26]    10.9    3.3     5.0     9.0    11.0    13.0    18.0
## Captures.pred[3,27]    12.4    3.5     6.0    10.0    12.0    15.0    20.0
## Captures.pred[3,28]    17.1    4.3    10.0    14.0    17.0    20.0    26.0
## Captures.pred[3,29]     9.5    3.2     4.0     7.0     9.0    12.0    16.0
## Captures.pred[3,30]     7.9    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[3,31]     5.6    2.3     2.0     4.0     5.0     7.0    11.0
## Captures.pred[3,32]     6.3    2.5     2.0     4.0     6.0     8.0    11.0
## Captures.pred[3,33]     9.3    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[3,34]     6.2    2.4     2.0     5.0     6.0     8.0    11.0
## Captures.pred[3,35]     5.3    2.4     1.0     4.0     5.0     7.0    10.0
## Captures.pred[4,1]      5.5    2.4     2.0     4.0     5.0     7.0    10.0
## Captures.pred[4,2]      4.5    2.2     1.0     3.0     4.0     6.0     9.0
## Captures.pred[4,3]      4.6    2.1     1.0     3.0     5.0     6.0     9.0
## Captures.pred[4,4]      3.3    1.8     0.0     2.0     3.0     4.0     7.0
## Captures.pred[4,5]      3.0    1.8     0.0     2.0     3.0     4.0     7.0
## Captures.pred[4,6]     10.9    3.3     5.0     9.0    11.0    13.0    17.0
## Captures.pred[4,7]      7.2    2.6     3.0     5.0     7.0     9.0    12.0
## Captures.pred[4,8]      8.3    2.9     3.0     6.0     8.0    10.0    15.0
## Captures.pred[4,9]      6.6    2.8     2.0     5.0     6.0     8.0    12.0
## Captures.pred[4,10]     4.5    2.3     1.0     3.0     4.0     6.0     9.0
## Captures.pred[4,11]    14.1    3.9     7.0    11.0    14.0    17.0    22.0
## Captures.pred[4,12]    17.0    4.3     9.0    14.0    17.0    20.0    26.0
## Captures.pred[4,13]    17.0    4.2     9.0    14.0    17.0    20.0    25.0
```

```
## Captures.pred[4,14]      7.6    2.8     3.0     6.0     7.0     9.0    13.0
## Captures.pred[4,15]      6.9    2.5     3.0     5.0     7.0     8.7    12.0
## Captures.pred[4,16]      7.6    2.7     3.0     6.0     8.0     9.0    13.0
## Captures.pred[4,17]      8.8    3.0     4.0     7.0     9.0    11.0    15.0
## Captures.pred[4,18]      9.7    3.2     4.0     7.0     9.0    12.0    17.0
## Captures.pred[4,19]      3.6    1.9     0.0     2.0     3.5     5.0     7.0
## Captures.pred[4,20]      2.9    1.7     0.0     2.0     3.0     4.0     7.0
## Captures.pred[4,21]     15.9    4.0     8.0    13.0    16.0    19.0    24.0
## Captures.pred[4,22]     31.3    5.7    20.0    27.2    31.0    35.0    43.0
## Captures.pred[4,23]     55.2    7.9    41.0    50.0    55.0    60.0    71.0
## Captures.pred[4,24]      7.0    2.7     2.0     5.0     7.0     9.0    13.0
## Captures.pred[4,25]      5.4    2.3     1.0     4.0     5.0     7.0    10.0
## Captures.pred[4,26]     20.0    4.6    11.0    17.0    20.0    23.0    29.0
## Captures.pred[4,27]     34.8    6.3    23.0    31.0    35.0    39.0    47.0
## Captures.pred[4,28]    126.5   12.4   102.0   118.0   126.0   135.0   150.0
## Captures.pred[4,29]     11.5    3.5     5.0     9.0    11.0    14.0    19.0
## Captures.pred[4,30]      7.0    2.7     2.0     5.0     7.0     9.0    13.0
## Captures.pred[4,31]      7.8    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[4,32]      8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[4,33]      8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[4,34]      5.7    2.5     2.0     4.0     6.0     7.0    11.0
## Captures.pred[4,35]      5.0    2.2     1.0     3.0     5.0     6.0    10.0
## Captures.pred[5,1]       4.6    2.2     1.0     3.0     4.0     6.0     9.0
## Captures.pred[5,2]       4.7    2.2     1.0     3.0     5.0     6.0     9.0
## Captures.pred[5,3]       6.6    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[5,4]       4.0    2.1     1.0     3.0     4.0     5.0     8.0
## Captures.pred[5,5]       4.1    2.1     1.0     3.0     4.0     5.0     9.0
## Captures.pred[5,6]       7.4    2.8     3.0     5.0     7.0     9.0    13.0
## Captures.pred[5,7]       8.4    3.0     3.0     6.0     8.0    10.0    15.0
## Captures.pred[5,8]      14.6    3.9     8.0    12.0    14.0    17.0    23.0
## Captures.pred[5,9]       5.9    2.4     2.0     4.0     6.0     7.0    11.0
## Captures.pred[5,10]      7.8    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[5,11]     12.2    3.4     6.0    10.0    12.0    14.0    19.0
## Captures.pred[5,12]     14.8    4.0     7.0    12.0    15.0    17.0    23.0
## Captures.pred[5,13]     16.6    4.3     9.0    13.0    16.0    19.0    25.0
## Captures.pred[5,14]      8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[5,15]      7.6    2.7     3.0     6.0     7.0     9.0    13.0
## Captures.pred[5,16]      7.5    2.8     3.0     5.0     7.0     9.0    14.0
## Captures.pred[5,17]      8.3    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[5,18]      9.3    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[5,19]      3.6    1.9     1.0     2.0     3.0     5.0     8.0
## Captures.pred[5,20]      3.7    1.9     0.0     2.0     3.0     5.0     7.0
## Captures.pred[5,21]     10.9    3.3     5.0     9.0    11.0    13.0    18.0
## Captures.pred[5,22]     16.7    4.2     9.0    14.0    17.0    20.0    25.0
## Captures.pred[5,23]     23.9    5.2    14.0    20.0    24.0    28.0    34.0
## Captures.pred[5,24]      5.9    2.5     2.0     4.0     6.0     7.0    11.0
## Captures.pred[5,25]      6.3    2.5     2.0     5.0     6.0     8.0    11.0
## Captures.pred[5,26]     10.8    3.3     4.0     8.0    11.0    13.0    18.0
## Captures.pred[5,27]     19.4    4.5    11.0    16.0    19.0    22.0    28.0
## Captures.pred[5,28]     32.4    6.0    21.0    28.2    32.0    36.0    46.0
## Captures.pred[5,29]     10.3    3.4     4.0     8.0    10.0    13.0    18.0
## Captures.pred[5,30]     10.0    3.0     5.0     8.0    10.0    12.0    16.0
## Captures.pred[5,31]      5.6    2.4     1.0     4.0     5.0     7.0    11.0
## Captures.pred[5,32]      7.0    2.7     2.0     5.0     7.0     9.0    13.0
```

```
## Captures.pred[5,33]      9.6    3.2     4.0     7.0     9.0    11.0    17.0
## Captures.pred[5,34]      5.2    2.3     1.0     4.0     5.0     7.0    10.0
## Captures.pred[5,35]      5.3    2.3     1.0     4.0     5.0     7.0    11.0
## Captures.pred[6,1]       6.4    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[6,2]       6.3    2.5     2.0     5.0     6.0     8.0    12.0
## Captures.pred[6,3]       5.7    2.4     2.0     4.0     6.0     7.0    11.0
## Captures.pred[6,4]       4.5    2.1     1.0     3.0     4.0     6.0     9.0
## Captures.pred[6,5]       6.6    2.5     2.0     5.0     6.0     8.0    12.0
## Captures.pred[6,6]       8.7    3.0     3.0     6.0     9.0    11.0    15.0
## Captures.pred[6,7]       9.9    3.2     4.0     8.0    10.0    12.0    16.0
## Captures.pred[6,8]       8.7    3.0     3.0     7.0     9.0    11.0    15.0
## Captures.pred[6,9]       6.5    2.7     2.0     5.0     6.0     8.0    13.0
## Captures.pred[6,10]     12.3    3.7     6.0    10.0    12.0    15.0    20.0
## Captures.pred[6,11]     21.9    4.8    12.0    19.0    22.0    25.0    32.0
## Captures.pred[6,12]     19.2    4.5    11.0    16.0    19.0    22.0    28.0
## Captures.pred[6,13]     13.7    3.7     7.0    11.0    14.0    16.0    22.0
## Captures.pred[6,14]     10.3    3.2     5.0     8.0    10.0    12.0    18.0
## Captures.pred[6,15]     21.0    4.6    12.0    18.0    21.0    24.0    31.0
## Captures.pred[6,16]      8.9    3.0     3.0     7.0     9.0    11.0    15.0
## Captures.pred[6,17]      9.5    2.9     4.0     7.0     9.0    11.0    16.0
## Captures.pred[6,18]      9.3    3.1     4.0     7.0     9.0    11.0    15.0
## Captures.pred[6,19]      4.7    2.2     1.0     3.0     5.0     6.0    10.0
## Captures.pred[6,20]     21.4    4.9    13.0    18.0    21.0    24.0    32.0
## Captures.pred[6,21]     71.0    9.0    55.0    64.2    71.0    77.0    89.0
## Captures.pred[6,22]     19.6    4.6    11.0    16.0    19.0    23.0    29.0
## Captures.pred[6,23]     12.9    3.5     6.0    10.0    13.0    15.0    20.0
## Captures.pred[6,24]      7.5    2.8     3.0     6.0     7.0     9.0    13.0
## Captures.pred[6,25]     44.2    7.0    32.0    39.0    44.0    49.0    59.0
## Captures.pred[6,26]     84.5   10.1    64.0    78.0    84.0    91.0   103.0
## Captures.pred[6,27]     36.2    6.4    25.0    32.0    36.0    41.0    49.0
## Captures.pred[6,28]     11.8    3.5     5.0     9.0    12.0    14.0    19.0
## Captures.pred[6,29]      9.4    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[6,30]     13.3    3.7     7.0    11.0    13.0    16.0    21.0
## Captures.pred[6,31]      7.6    2.7     3.0     6.0     7.5     9.0    13.0
## Captures.pred[6,32]      8.1    3.0     3.0     6.0     8.0    10.0    14.0
## Captures.pred[6,33]      7.4    2.7     3.0     6.0     7.0     9.0    13.0
## Captures.pred[6,34]      6.8    2.7     2.0     5.0     7.0     8.0    12.0
## Captures.pred[6,35]     46.0    7.4    33.0    41.0    46.0    51.0    61.0
## Captures.pred[7,1]       7.0    2.6     3.0     5.0     7.0     9.0    12.0
## Captures.pred[7,2]       7.6    2.9     3.0     6.0     7.0    10.0    13.0
## Captures.pred[7,3]       5.6    2.4     2.0     4.0     5.0     7.0    11.0
## Captures.pred[7,4]       4.9    2.2     1.0     3.0     5.0     6.0    10.0
## Captures.pred[7,5]       7.0    2.5     2.0     5.0     7.0     9.0    12.0
## Captures.pred[7,6]      10.9    3.5     5.0     8.0    11.0    13.0    18.0
## Captures.pred[7,7]      13.8    3.7     7.0    11.0    14.0    16.0    22.0
## Captures.pred[7,8]       9.8    3.2     4.0     8.0    10.0    12.0    16.0
## Captures.pred[7,9]       7.1    2.6     3.0     5.0     7.0     9.0    13.0
## Captures.pred[7,10]      9.8    3.1     4.0     7.0    10.0    12.0    16.0
## Captures.pred[7,11]     24.6    5.3    14.0    21.0    24.0    28.0    35.0
## Captures.pred[7,12]     23.5    5.1    14.0    20.0    23.0    27.0    34.0
## Captures.pred[7,13]     18.2    4.5    10.0    15.0    18.0    21.0    27.0
## Captures.pred[7,14]     12.8    3.6     6.0    10.0    13.0    15.0    21.0
## Captures.pred[7,15]     19.5    4.4    12.0    17.0    19.0    22.0    29.0
## Captures.pred[7,16]     12.9    3.6     6.0    10.0    13.0    15.0    21.0
```

```
## Captures.pred[7,17]    14.6    3.9     8.0    12.0    14.0    17.0    23.0
## Captures.pred[7,18]     9.9    3.2     4.0     8.0    10.0    12.0    17.0
## Captures.pred[7,19]     5.5    2.2     2.0     4.0     5.0     7.0    10.0
## Captures.pred[7,20]     6.0    2.4     2.0     4.0     6.0     8.0    11.0
## Captures.pred[7,21]    48.1    7.3    35.0    43.0    48.0    53.0    63.0
## Captures.pred[7,22]    33.0    5.8    22.0    29.0    33.0    37.0    45.0
## Captures.pred[7,23]    26.7    5.3    17.0    23.0    26.0    30.0    37.0
## Captures.pred[7,24]     9.4    3.0     4.0     7.0     9.0    11.0    16.0
## Captures.pred[7,25]     9.5    3.1     4.0     7.0     9.0    12.0    16.0
## Captures.pred[7,26]    74.9    9.5    56.0    69.0    75.0    81.0    92.0
## Captures.pred[7,27]    48.5    7.2    36.0    44.0    48.0    53.0    64.0
## Captures.pred[7,28]    22.5    4.8    14.0    19.0    22.0    26.0    32.0
## Captures.pred[7,29]    10.1    3.3     4.0     8.0    10.0    12.0    17.0
## Captures.pred[7,30]    15.4    4.2     8.0    13.0    15.0    18.0    24.0
## Captures.pred[7,31]    10.1    3.2     4.0     8.0    10.0    12.0    17.0
## Captures.pred[7,32]    11.8    3.5     6.0     9.0    12.0    14.0    19.0
## Captures.pred[7,33]    12.0    3.5     5.0     9.0    12.0    14.0    19.0
## Captures.pred[7,34]     8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[7,35]     8.1    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[8,1]      8.2    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[8,2]      5.3    2.3     1.0     4.0     5.0     7.0    10.0
## Captures.pred[8,3]      4.2    2.0     1.0     3.0     4.0     6.0     8.0
## Captures.pred[8,4]      4.3    2.1     1.0     3.0     4.0     6.0     9.0
## Captures.pred[8,5]      6.6    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[8,6]     14.7    3.9     7.0    12.0    15.0    17.0    22.0
## Captures.pred[8,7]      9.2    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[8,8]      6.3    2.5     2.0     5.0     6.0     8.0    12.0
## Captures.pred[8,9]      8.5    3.0     3.0     6.0     8.0    10.0    15.0
## Captures.pred[8,10]    10.1    3.3     4.0     8.0    10.0    12.0    17.0
## Captures.pred[8,11]    33.4    6.1    23.0    29.0    33.0    37.0    47.0
## Captures.pred[8,12]    15.6    4.0     8.0    13.0    15.0    18.0    24.0
## Captures.pred[8,13]    10.0    3.3     4.0     8.0    10.0    12.0    17.0
## Captures.pred[8,14]    10.8    3.3     5.0     8.0    11.0    13.0    17.0
## Captures.pred[8,15]    17.2    4.3    10.0    14.0    17.0    20.0    26.0
## Captures.pred[8,16]    16.4    4.2     9.0    13.2    16.0    19.0    25.0
## Captures.pred[8,17]    10.4    3.2     5.0     8.0    10.0    13.0    17.0
## Captures.pred[8,18]     4.2    2.1     1.0     3.0     4.0     5.0     9.0
## Captures.pred[8,19]     4.8    2.2     1.0     3.0     5.0     6.0    10.0
## Captures.pred[8,20]     5.9    2.4     1.0     4.0     6.0     7.0    11.0
## Captures.pred[8,21]    44.2    7.2    31.0    39.0    44.0    49.0    59.0
## Captures.pred[8,22]    11.9    3.4     6.0    10.0    12.0    14.0    19.0
## Captures.pred[8,23]     7.9    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[8,24]     8.4    3.0     3.0     6.0     8.0    10.0    15.0
## Captures.pred[8,25]    12.3    3.5     6.0    10.0    12.0    15.0    19.0
## Captures.pred[8,26]    74.1    9.5    54.0    68.0    74.0    80.0    94.0
## Captures.pred[8,27]    14.5    3.8     8.0    12.0    14.0    17.0    23.0
## Captures.pred[8,28]     9.5    3.2     4.0     7.0     9.0    12.0    16.0
## Captures.pred[8,29]    10.6    3.3     5.0     8.0    10.0    13.0    17.0
## Captures.pred[8,30]   118.4   12.4    96.0   110.0   118.0   127.0   144.0
## Captures.pred[8,31]    77.1    9.6    59.0    71.0    77.0    84.0    97.0
## Captures.pred[8,32]     8.1    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[8,33]     6.8    2.5     2.0     5.0     7.0     8.0    12.0
## Captures.pred[8,34]     7.5    2.8     3.0     5.0     7.0     9.0    13.0
## Captures.pred[8,35]    10.1    3.3     4.0     8.0    10.0    12.0    17.0
```

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## Captures.pred[9,1]       3.8    2.0     1.0     2.0     4.0     5.0     8.0
## Captures.pred[9,2]       3.6    2.0     0.0     2.0     3.0     5.0     8.0
## Captures.pred[9,3]       3.2    1.8     0.0     2.0     3.0     4.0     7.0
## Captures.pred[9,4]       3.9    2.0     0.0     3.0     4.0     5.0     8.0
## Captures.pred[9,5]      22.7    4.9    14.0    19.0    22.0    26.0    33.0
## Captures.pred[9,6]       7.5    2.8     3.0     5.2     7.0     9.0    14.0
## Captures.pred[9,7]       9.2    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[9,8]       6.3    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[9,9]      13.0    3.7     6.0    10.0    13.0    15.0    21.0
## Captures.pred[9,10]      8.6    2.8     3.0     7.0     9.0    10.0    14.0
## Captures.pred[9,11]     12.0    3.6     5.0     9.0    12.0    14.0    20.0
## Captures.pred[9,12]     21.2    4.8    12.0    18.0    21.0    24.0    31.0
## Captures.pred[9,13]      8.5    3.0     3.0     6.0     8.0    10.0    15.0
## Captures.pred[9,14]     11.3    3.4     6.0     9.0    11.0    13.0    18.0
## Captures.pred[9,15]     18.2    4.3    11.0    15.0    18.0    21.0    27.0
## Captures.pred[9,16]      7.2    2.7     2.0     5.0     7.0     9.0    13.0
## Captures.pred[9,17]     10.2    3.3     4.0     8.0    10.0    12.0    17.0
## Captures.pred[9,18]      5.5    2.3     2.0     4.0     5.0     7.0    11.0
## Captures.pred[9,19]      4.4    2.1     1.0     3.0     4.0     6.0     9.0
## Captures.pred[9,20]      6.1    2.5     2.0     4.0     6.0     8.0    11.0
## Captures.pred[9,21]     33.2    5.7    22.0    29.0    33.0    37.0    45.0
## Captures.pred[9,22]     21.1    4.8    12.0    18.0    21.0    24.0    31.0
## Captures.pred[9,23]      7.3    2.7     2.0     5.0     7.0     9.0    13.0
## Captures.pred[9,24]     10.5    3.3     5.0     8.0    10.0    13.0    17.0
## Captures.pred[9,25]     14.1    3.8     7.0    12.0    14.0    17.0    22.0
## Captures.pred[9,26]    113.2   12.5    91.0   105.0   113.0   121.0   138.0
## Captures.pred[9,27]     21.3    4.8    12.0    18.0    21.0    24.0    31.0
## Captures.pred[9,28]      9.4    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[9,29]     14.4    3.9     7.0    12.0    14.0    17.0    22.0
## Captures.pred[9,30]     11.4    3.4     5.0     9.0    11.0    14.0    19.0
## Captures.pred[9,31]      8.0    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[9,32]      9.4    3.2     4.0     7.0     9.0    11.0    16.0
## Captures.pred[9,33]      6.6    2.5     2.0     5.0     6.0     8.0    12.0
## Captures.pred[9,34]      6.9    2.5     2.0     5.0     7.0     9.0    12.0
## Captures.pred[9,35]     10.2    3.2     5.0     8.0    10.0    12.0    17.0
## Captures.pred[10,1]      4.0    2.0     1.0     3.0     4.0     5.0     8.0
## Captures.pred[10,2]      2.7    1.7     0.0     1.0     3.0     4.0     6.0
## Captures.pred[10,3]      3.6    2.0     0.0     2.0     4.0     5.0     8.0
## Captures.pred[10,4]      3.7    1.9     1.0     2.0     3.0     5.0     8.0
## Captures.pred[10,5]      5.5    2.3     1.0     4.0     5.0     7.0    11.0
## Captures.pred[10,6]      5.9    2.5     2.0     4.0     6.0     8.0    11.0
## Captures.pred[10,7]      4.9    2.3     1.0     3.0     5.0     6.0    10.0
## Captures.pred[10,8]      5.9    2.4     2.0     4.0     6.0     7.0    11.0
## Captures.pred[10,9]      6.8    2.7     2.0     5.0     7.0     8.0    13.0
## Captures.pred[10,10]     8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[10,11]     9.4    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[10,12]     7.5    2.8     3.0     5.0     7.0     9.0    13.0
## Captures.pred[10,13]    11.2    3.3     5.0     9.0    11.0    13.0    17.0
## Captures.pred[10,14]    11.3    3.4     5.0     9.0    11.0    14.0    19.0
## Captures.pred[10,15]    19.5    4.7    11.0    16.0    19.0    23.0    29.0
## Captures.pred[10,16]     6.9    2.6     3.0     5.0     7.0     9.0    12.0
## Captures.pred[10,17]     3.9    2.0     1.0     2.0     4.0     5.0     8.0
## Captures.pred[10,18]     5.4    2.4     1.0     4.0     5.0     7.0    11.0
## Captures.pred[10,19]     4.1    2.0     1.0     3.0     4.0     5.0     9.0
```

```
## Captures.pred[10,20]     7.9    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[10,21]    10.8    3.4     5.0     9.0    11.0    13.0    18.0
## Captures.pred[10,22]     6.5    2.7     2.0     5.0     6.0     8.0    12.0
## Captures.pred[10,23]     9.1    3.0     3.0     7.0     9.0    11.0    15.0
## Captures.pred[10,24]    11.0    3.4     5.0     9.0    11.0    13.0    18.0
## Captures.pred[10,25]    18.1    4.3    10.0    15.0    18.0    21.0    27.0
## Captures.pred[10,26]    13.8    3.8     7.0    11.0    14.0    16.0    22.0
## Captures.pred[10,27]     6.3    2.5     2.0     4.0     6.0     8.0    12.0
## Captures.pred[10,28]     9.9    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[10,29]     9.1    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[10,30]    10.4    3.2     5.0     8.0    10.0    12.7    17.0
## Captures.pred[10,31]    19.0    4.6    10.0    16.0    19.0    22.0    28.0
## Captures.pred[10,32]     3.7    2.0     0.0     2.0     4.0     5.0     8.0
## Captures.pred[10,33]     8.4    2.8     4.0     6.0     8.0    10.0    14.0
## Captures.pred[10,34]     8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[10,35]     9.3    3.1     4.0     7.0     9.0    11.0    16.0
## Captures.pred[11,1]      8.2    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[11,2]      6.4    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[11,3]     13.7    3.8     7.0    11.0    13.0    16.0    22.0
## Captures.pred[11,4]     13.6    3.8     7.0    11.0    14.0    16.0    21.0
## Captures.pred[11,5]     26.7    5.3    17.0    23.0    27.0    30.0    37.0
## Captures.pred[11,6]     14.8    3.8     8.0    12.0    15.0    17.0    23.0
## Captures.pred[11,7]     12.7    3.5     6.0    10.0    13.0    15.0    20.0
## Captures.pred[11,8]     44.0    7.0    31.0    39.0    44.0    48.0    58.0
## Captures.pred[11,9]     19.3    4.3    11.0    16.0    19.0    22.0    28.0
## Captures.pred[11,10]    23.3    5.1    14.0    20.0    23.0    27.0    34.0
## Captures.pred[11,11]    22.0    4.7    13.0    19.0    22.0    25.0    31.0
## Captures.pred[11,12]    21.0    4.7    12.0    18.0    21.0    24.0    31.0
## Captures.pred[11,13]    34.8    6.1    23.0    31.0    35.0    39.0    47.0
## Captures.pred[11,14]    37.0    6.4    25.0    33.0    37.0    41.0    50.0
## Captures.pred[11,15]    41.1    6.8    29.0    37.0    41.0    46.0    54.0
## Captures.pred[11,16]    11.9    3.6     6.0    10.0    12.0    14.0    20.0
## Captures.pred[11,17]    11.2    3.5     5.0     9.0    11.0    13.0    19.0
## Captures.pred[11,18]    18.8    4.5    11.0    16.0    19.0    22.0    28.0
## Captures.pred[11,19]    13.4    3.7     7.0    11.0    13.0    16.0    21.0
## Captures.pred[11,20]    17.8    4.3    10.0    15.0    18.0    21.0    27.0
## Captures.pred[11,21]    18.0    4.2    10.0    15.0    18.0    21.0    27.0
## Captures.pred[11,22]    17.4    4.2    10.0    15.0    17.0    20.0    26.0
## Captures.pred[11,23]    39.3    6.2    28.0    35.0    39.0    43.0    52.0
## Captures.pred[11,24]    38.8    6.6    26.0    34.0    38.0    43.0    52.0
## Captures.pred[11,25]    31.8    5.7    21.0    28.0    32.0    35.0    43.0
## Captures.pred[11,26]    17.4    4.2     9.0    14.0    17.0    20.0    26.0
## Captures.pred[11,27]    16.7    4.2     9.0    14.0    17.0    19.7    25.0
## Captures.pred[11,28]    72.4    9.0    56.0    66.0    72.0    78.0    91.0
## Captures.pred[11,29]    50.1    7.4    36.0    45.0    50.0    55.0    65.0
## Captures.pred[11,30]    31.8    5.7    21.0    28.0    32.0    36.0    43.0
## Captures.pred[11,31]    15.3    4.0     8.0    13.0    15.0    18.0    24.0
## Captures.pred[11,32]     8.9    3.1     4.0     7.0     9.0    11.0    15.0
## Captures.pred[11,33]    26.6    5.2    17.0    23.0    27.0    30.0    37.0
## Captures.pred[11,34]    23.5    5.0    14.0    20.0    23.5    27.0    34.0
## Captures.pred[11,35]    20.6    4.6    12.0    17.0    20.0    23.0    30.0
## Captures.pred[12,1]      4.0    2.2     1.0     2.0     4.0     5.0     9.0
## Captures.pred[12,2]      3.5    1.9     0.0     2.0     3.0     5.0     7.0
## Captures.pred[12,3]      5.5    2.4     1.0     4.0     5.0     7.0    11.0
```

```
## Captures.pred[12,4]      6.4    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[12,5]      8.9    3.0     4.0     7.0     9.0    11.0    15.0
## Captures.pred[12,6]      7.2    2.7     3.0     5.0     7.0     9.0    13.0
## Captures.pred[12,7]      8.2    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[12,8]      9.0    3.2     3.0     7.0     9.0    11.0    16.0
## Captures.pred[12,9]      9.2    3.0     4.0     7.0     9.0    11.0    15.0
## Captures.pred[12,10]    14.8    4.0     8.0    12.0    15.0    17.7    22.0
## Captures.pred[12,11]    11.1    3.5     5.0     9.0    11.0    13.0    19.0
## Captures.pred[12,12]     9.8    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[12,13]    13.2    3.6     6.0    11.0    13.0    15.0    20.0
## Captures.pred[12,14]    14.3    3.8     7.0    12.0    14.0    17.0    22.0
## Captures.pred[12,15]    17.3    4.4    10.0    14.0    17.0    20.0    26.0
## Captures.pred[12,16]     5.9    2.5     2.0     4.0     6.0     7.0    11.0
## Captures.pred[12,17]     6.0    2.5     2.0     4.0     6.0     7.0    11.0
## Captures.pred[12,18]     6.0    2.5     2.0     4.0     6.0     7.0    11.0
## Captures.pred[12,19]     7.2    2.6     3.0     5.0     7.0     9.0    13.0
## Captures.pred[12,20]     8.6    3.0     3.0     6.0     8.0    11.0    15.0
## Captures.pred[12,21]     8.3    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[12,22]     8.5    3.0     3.0     6.0     8.0    10.0    15.0
## Captures.pred[12,23]    12.6    3.5     6.0    10.0    13.0    15.0    20.0
## Captures.pred[12,24]    13.9    4.0     7.0    11.0    14.0    16.0    22.0
## Captures.pred[12,25]    14.4    3.9     7.0    12.0    14.0    17.0    23.0
## Captures.pred[12,26]     7.8    2.9     3.0     6.0     7.0    10.0    14.0
## Captures.pred[12,27]     8.0    3.0     3.0     6.0     8.0    10.0    14.0
## Captures.pred[12,28]    14.1    3.8     7.0    12.0    14.0    16.0    22.0
## Captures.pred[12,29]    13.3    3.8     6.0    11.0    13.0    16.0    21.0
## Captures.pred[12,30]    23.9    5.1    15.0    20.0    24.0    27.0    34.0
## Captures.pred[12,31]     4.7    2.2     1.0     3.0     5.0     6.0     9.0
## Captures.pred[12,32]     5.0    2.3     1.0     3.0     5.0     6.0    10.0
## Captures.pred[12,33]     9.7    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[12,34]    11.0    3.5     5.0     9.0    11.0    13.0    18.0
## Captures.pred[12,35]    11.4    3.4     5.0     9.0    11.0    14.0    18.0
## Captures.pred[13,1]      6.0    2.5     2.0     4.0     6.0     8.0    12.0
## Captures.pred[13,2]      7.1    2.6     2.0     5.0     7.0     9.0    13.0
## Captures.pred[13,3]      9.7    3.2     4.0     7.0    10.0    12.0    16.0
## Captures.pred[13,4]     11.4    3.4     5.0     9.0    11.0    14.0    18.0
## Captures.pred[13,5]     12.8    3.6     6.0    10.0    13.0    15.0    20.0
## Captures.pred[13,6]     11.7    3.6     6.0     9.0    11.0    14.0    19.0
## Captures.pred[13,7]     17.0    4.0    10.0    14.0    17.0    20.0    25.0
## Captures.pred[13,8]     16.7    4.1    10.0    14.0    16.0    19.0    25.0
## Captures.pred[13,9]     16.7    4.2     9.0    14.0    17.0    19.0    25.0
## Captures.pred[13,10]    18.4    4.4    10.0    15.0    18.0    21.0    27.0
## Captures.pred[13,11]    20.4    4.6    11.0    17.0    20.0    24.0    29.0
## Captures.pred[13,12]    38.3    6.3    26.0    34.0    38.0    43.0    52.0
## Captures.pred[13,13]    32.5    5.7    22.0    29.0    32.0    36.0    44.0
## Captures.pred[13,14]    26.9    5.2    17.0    23.0    27.0    30.0    38.0
## Captures.pred[13,15]    21.2    4.6    13.0    18.0    21.0    24.0    30.0
## Captures.pred[13,16]    11.1    3.4     5.0     9.0    11.0    13.0    18.0
## Captures.pred[13,17]    22.3    4.6    13.0    19.0    22.0    25.0    32.0
## Captures.pred[13,18]    13.0    3.5     7.0    11.0    13.0    15.0    21.0
## Captures.pred[13,19]    13.7    3.8     7.0    11.0    14.0    16.0    21.0
## Captures.pred[13,20]    11.0    3.3     5.0     9.0    11.0    13.0    18.0
## Captures.pred[13,21]    14.9    3.9     8.0    12.0    15.0    17.0    23.0
## Captures.pred[13,22]    82.8    9.9    63.0    76.0    83.0    89.0   102.0
```

```
## Captures.pred[13,23]    51.6    7.3    38.0    46.0    51.0    57.0    66.0
## Captures.pred[13,24]    34.0    5.8    23.0    30.0    34.0    38.0    45.0
## Captures.pred[13,25]    19.1    4.4    11.0    16.0    19.0    22.0    28.0
## Captures.pred[13,26]    14.4    3.8     7.0    12.0    14.0    17.0    22.0
## Captures.pred[13,27]    72.6    9.1    56.0    67.0    72.0    78.0    91.0
## Captures.pred[13,28]    35.6    6.2    24.0    31.0    36.0    40.0    48.0
## Captures.pred[13,29]    23.7    5.0    15.0    20.0    23.0    27.0    34.0
## Captures.pred[13,30]    29.0    5.5    18.0    25.2    29.0    33.0    40.0
## Captures.pred[13,31]    10.0    3.1     4.0     8.0    10.0    12.0    16.0
## Captures.pred[13,32]    31.2    5.8    20.0    27.0    31.0    35.0    43.0
## Captures.pred[13,33]    32.2    5.8    21.0    28.0    32.0    36.0    44.0
## Captures.pred[13,34]    26.2    5.2    17.0    23.0    26.0    29.7    37.0
## Captures.pred[13,35]    15.2    3.9     8.0    13.0    15.0    18.0    23.0
## Captures.pred[14,1]      3.0    1.7     0.0     2.0     3.0     4.0     7.0
## Captures.pred[14,2]      4.4    2.1     1.0     3.0     4.0     6.0     9.0
## Captures.pred[14,3]      5.4    2.4     1.0     4.0     5.0     7.0    10.0
## Captures.pred[14,4]      7.6    2.8     3.0     6.0     7.0     9.0    14.0
## Captures.pred[14,5]      5.6    2.4     2.0     4.0     6.0     7.0    11.0
## Captures.pred[14,6]      5.7    2.4     1.0     4.0     5.0     7.0    11.0
## Captures.pred[14,7]      6.5    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[14,8]      8.4    2.9     3.0     6.0     8.0    10.0    15.0
## Captures.pred[14,9]     11.5    3.4     5.0     9.0    11.0    14.0    19.0
## Captures.pred[14,10]     7.8    2.9     3.0     6.0     7.0    10.0    14.0
## Captures.pred[14,11]    10.8    3.4     5.0     8.0    10.5    13.0    18.0
## Captures.pred[14,12]    14.3    3.8     7.0    12.0    14.0    17.0    22.0
## Captures.pred[14,13]    19.9    4.8    11.0    17.0    20.0    23.0    31.0
## Captures.pred[14,14]    16.6    4.2     9.0    13.0    16.0    19.0    25.0
## Captures.pred[14,15]    12.3    3.6     6.0    10.0    12.0    15.0    20.0
## Captures.pred[14,16]     6.5    2.6     2.0     5.0     6.0     8.0    12.0
## Captures.pred[14,17]     6.7    2.7     2.0     5.0     7.0     8.0    12.0
## Captures.pred[14,18]     6.0    2.6     2.0     4.0     6.0     8.0    12.0
## Captures.pred[14,19]    10.0    3.2     4.0     8.0    10.0    12.0    17.0
## Captures.pred[14,20]     6.3    2.6     2.0     4.0     6.0     8.0    12.0
## Captures.pred[14,21]     8.6    3.0     3.0     7.0     8.0    11.0    15.0
## Captures.pred[14,22]     8.8    2.9     4.0     7.0     9.0    11.0    15.0
## Captures.pred[14,23]    17.5    4.2    10.0    14.0    17.0    20.0    26.0
## Captures.pred[14,24]    21.4    4.8    13.0    18.0    21.0    25.0    31.0
## Captures.pred[14,25]    16.0    4.3     8.0    13.0    16.0    19.0    25.0
## Captures.pred[14,26]     8.0    2.8     3.0     6.0     8.0    10.0    14.0
## Captures.pred[14,27]     8.1    2.9     3.0     6.0     8.0    10.0    14.0
## Captures.pred[14,28]    11.8    3.7     6.0     9.0    12.0    14.0    20.0
## Captures.pred[14,29]    18.6    4.4    11.0    16.0    18.0    22.0    28.0
## Captures.pred[14,30]    16.0    4.2     8.0    13.0    16.0    19.0    24.0
## Captures.pred[14,31]    10.3    3.2     5.0     8.0    10.0    12.0    17.0
## Captures.pred[14,32]     5.3    2.2     1.0     4.0     5.0     7.0    10.0
## Captures.pred[14,33]    10.2    3.3     5.0     8.0    10.0    12.0    17.0
## Captures.pred[14,34]    20.6    4.8    12.0    17.0    20.0    24.0    30.0
## Captures.pred[14,35]    11.9    3.5     5.0     9.0    12.0    14.0    20.0
## deviance             15302.5    6.8 15290.0 15300.0 15300.0 15310.0 15320.0
##                      Rhat n.eff
## beta0                   1   800
## beta1                   1  1000
## beta2                   1   660
## beta3                   1  1000
```

```
## beta4                  1   450
## v[1]                   1   510
## v[2]                   1   690
## v[3]                   1   700
## v[4]                   1  1000
## v[5]                   1   890
## v[6]                   1   410
## v[7]                   1   330
## v[8]                   1   450
## v[9]                   1   310
## v[10]                  1  1000
## v[11]                  1  1000
## v[12]                  1  1000
## v[13]                  1   890
## v[14]                  1   450
## sdv                    1  1000
## resid[1,1]             1  1000
## resid[1,2]             1  1000
## resid[1,3]             1   300
## resid[1,4]             1  1000
## resid[1,5]             1  1000
## resid[1,6]             1  1000
## resid[1,7]             1   730
## resid[1,8]             1   710
## resid[1,9]             1  1000
## resid[1,10]            1  1000
## resid[1,11]            1  1000
## resid[1,12]            1  1000
## resid[1,13]            1   970
## resid[1,14]            1   930
## resid[1,15]            1  1000
## resid[1,16]            1   730
## resid[1,17]            1  1000
## resid[1,18]            1   620
## resid[1,19]            1   590
## resid[1,20]            1   460
## resid[1,21]            1  1000
## resid[1,22]            1   690
## resid[1,23]            1  1000
## resid[1,24]            1   670
## resid[1,25]            1  1000
## resid[1,26]            1  1000
## resid[1,27]            1   710
## resid[1,28]            1  1000
## resid[1,29]            1  1000
## resid[1,30]            1  1000
## resid[1,31]            1  1000
## resid[1,32]            1   970
## resid[1,33]            1  1000
## resid[1,34]            1   870
## resid[1,35]            1   500
## resid[2,1]             1  1000
## resid[2,2]             1  1000
## resid[2,3]             1   630
```

```
## resid[2,4]              1  1000
## resid[2,5]              1  1000
## resid[2,6]              1  1000
## resid[2,7]              1   600
## resid[2,8]              1  1000
## resid[2,9]              1  1000
## resid[2,10]             1  1000
## resid[2,11]             1  1000
## resid[2,12]             1   780
## resid[2,13]             1  1000
## resid[2,14]             1   430
## resid[2,15]             1  1000
## resid[2,16]             1   240
## resid[2,17]             1  1000
## resid[2,18]             1  1000
## resid[2,19]             1  1000
## resid[2,20]             1  1000
## resid[2,21]             1  1000
## resid[2,22]             1  1000
## resid[2,23]             1  1000
## resid[2,24]             1  1000
## resid[2,25]             1  1000
## resid[2,26]             1  1000
## resid[2,27]             1   900
## resid[2,28]             1   450
## resid[2,29]             1  1000
## resid[2,30]             1  1000
## resid[2,31]             1  1000
## resid[2,32]             1   770
## resid[2,33]             1   430
## resid[2,34]             1  1000
## resid[2,35]             1  1000
## resid[3,1]              1   980
## resid[3,2]              1   640
## resid[3,3]              1  1000
## resid[3,4]              1  1000
## resid[3,5]              1  1000
## resid[3,6]              1  1000
## resid[3,7]              1  1000
## resid[3,8]              1  1000
## resid[3,9]              1  1000
## resid[3,10]             1  1000
## resid[3,11]             1  1000
## resid[3,12]             1   690
## resid[3,13]             1  1000
## resid[3,14]             1   640
## resid[3,15]             1   390
## resid[3,16]             1  1000
## resid[3,17]             1   780
## resid[3,18]             1  1000
## resid[3,19]             1   680
## resid[3,20]             1  1000
## resid[3,21]             1  1000
## resid[3,22]             1  1000
```

```
## resid[3,23]            1   500
## resid[3,24]            1  1000
## resid[3,25]            1  1000
## resid[3,26]            1  1000
## resid[3,27]            1  1000
## resid[3,28]            1   230
## resid[3,29]            1  1000
## resid[3,30]            1   360
## resid[3,31]            1  1000
## resid[3,32]            1   470
## resid[3,33]            1  1000
## resid[3,34]            1  1000
## resid[3,35]            1  1000
## resid[4,1]             1   480
## resid[4,2]             1   420
## resid[4,3]             1   230
## resid[4,4]             1  1000
## resid[4,5]             1  1000
## resid[4,6]             1  1000
## resid[4,7]             1   730
## resid[4,8]             1   700
## resid[4,9]             1  1000
## resid[4,10]            1   980
## resid[4,11]            1   700
## resid[4,12]            1  1000
## resid[4,13]            1  1000
## resid[4,14]            1   690
## resid[4,15]            1   480
## resid[4,16]            1  1000
## resid[4,17]            1  1000
## resid[4,18]            1   910
## resid[4,19]            1  1000
## resid[4,20]            1   550
## resid[4,21]            1  1000
## resid[4,22]            1   690
## resid[4,23]            1   320
## resid[4,24]            1  1000
## resid[4,25]            1  1000
## resid[4,26]            1  1000
## resid[4,27]            1  1000
## resid[4,28]            1   160
## resid[4,29]            1  1000
## resid[4,30]            1   660
## resid[4,31]            1   470
## resid[4,32]            1  1000
## resid[4,33]            1  1000
## resid[4,34]            1  1000
## resid[4,35]            1   380
## resid[5,1]             1   640
## resid[5,2]             1  1000
## resid[5,3]             1   770
## resid[5,4]             1  1000
## resid[5,5]             1   570
## resid[5,6]             1   480
```

```
## resid[5,7]              1  1000
## resid[5,8]              1   620
## resid[5,9]              1   770
## resid[5,10]             1   860
## resid[5,11]             1   890
## resid[5,12]             1   480
## resid[5,13]             1   390
## resid[5,14]             1  1000
## resid[5,15]             1  1000
## resid[5,16]             1   470
## resid[5,17]             1   530
## resid[5,18]             1  1000
## resid[5,19]             1   970
## resid[5,20]             1  1000
## resid[5,21]             1   400
## resid[5,22]             1   780
## resid[5,23]             1   500
## resid[5,24]             1   490
## resid[5,25]             1  1000
## resid[5,26]             1   850
## resid[5,27]             1  1000
## resid[5,28]             1   190
## resid[5,29]             1  1000
## resid[5,30]             1   380
## resid[5,31]             1   990
## resid[5,32]             1  1000
## resid[5,33]             1   960
## resid[5,34]             1  1000
## resid[5,35]             1  1000
## resid[6,1]              1  1000
## resid[6,2]              1  1000
## resid[6,3]              1  1000
## resid[6,4]              1  1000
## resid[6,5]              1   820
## resid[6,6]              1   770
## resid[6,7]              1   800
## resid[6,8]              1  1000
## resid[6,9]              1   430
## resid[6,10]             1   830
## resid[6,11]             1  1000
## resid[6,12]             1  1000
## resid[6,13]             1   430
## resid[6,14]             1  1000
## resid[6,15]             1  1000
## resid[6,16]             1  1000
## resid[6,17]             1  1000
## resid[6,18]             1  1000
## resid[6,19]             1  1000
## resid[6,20]             1   280
## resid[6,21]             1   700
## resid[6,22]             1  1000
## resid[6,23]             1  1000
## resid[6,24]             1  1000
## resid[6,25]             1  1000
```

```
## resid[6,26]            1  1000
## resid[6,27]            1   540
## resid[6,28]            1  1000
## resid[6,29]            1   480
## resid[6,30]            1  1000
## resid[6,31]            1  1000
## resid[6,32]            1  1000
## resid[6,33]            1  1000
## resid[6,34]            1  1000
## resid[6,35]            1  1000
## resid[7,1]             1   410
## resid[7,2]             1  1000
## resid[7,3]             1  1000
## resid[7,4]             1  1000
## resid[7,5]             1  1000
## resid[7,6]             1  1000
## resid[7,7]             1  1000
## resid[7,8]             1  1000
## resid[7,9]             1   330
## resid[7,10]            1  1000
## resid[7,11]            1  1000
## resid[7,12]            1  1000
## resid[7,13]            1  1000
## resid[7,14]            1  1000
## resid[7,15]            1  1000
## resid[7,16]            1   820
## resid[7,17]            1  1000
## resid[7,18]            1  1000
## resid[7,19]            1  1000
## resid[7,20]            1  1000
## resid[7,21]            1  1000
## resid[7,22]            1  1000
## resid[7,23]            1  1000
## resid[7,24]            1  1000
## resid[7,25]            1  1000
## resid[7,26]            1   780
## resid[7,27]            1  1000
## resid[7,28]            1   890
## resid[7,29]            1   820
## resid[7,30]            1  1000
## resid[7,31]            1   210
## resid[7,32]            1  1000
## resid[7,33]            1   560
## resid[7,34]            1   850
## resid[7,35]            1  1000
## resid[8,1]             1  1000
## resid[8,2]             1  1000
## resid[8,3]             1  1000
## resid[8,4]             1  1000
## resid[8,5]             1  1000
## resid[8,6]             1   790
## resid[8,7]             1   370
## resid[8,8]             1   610
## resid[8,9]             1   840
```

```
## resid[8,10]            1   430
## resid[8,11]            1   370
## resid[8,12]            1   230
## resid[8,13]            1  1000
## resid[8,14]            1  1000
## resid[8,15]            1  1000
## resid[8,16]            1  1000
## resid[8,17]            1  1000
## resid[8,18]            1  1000
## resid[8,19]            1  1000
## resid[8,20]            1  1000
## resid[8,21]            1  1000
## resid[8,22]            1   950
## resid[8,23]            1  1000
## resid[8,24]            1  1000
## resid[8,25]            1  1000
## resid[8,26]            1  1000
## resid[8,27]            1  1000
## resid[8,28]            1   860
## resid[8,29]            1  1000
## resid[8,30]            1   880
## resid[8,31]            1  1000
## resid[8,32]            1  1000
## resid[8,33]            1   380
## resid[8,34]            1  1000
## resid[8,35]            1   530
## resid[9,1]             1  1000
## resid[9,2]             1  1000
## resid[9,3]             1  1000
## resid[9,4]             1   220
## resid[9,5]             1   590
## resid[9,6]             1   270
## resid[9,7]             1  1000
## resid[9,8]             1  1000
## resid[9,9]             1   270
## resid[9,10]            1   970
## resid[9,11]            1  1000
## resid[9,12]            1   350
## resid[9,13]            1  1000
## resid[9,14]            1  1000
## resid[9,15]            1  1000
## resid[9,16]            1  1000
## resid[9,17]            1  1000
## resid[9,18]            1  1000
## resid[9,19]            1   740
## resid[9,20]            1  1000
## resid[9,21]            1  1000
## resid[9,22]            1  1000
## resid[9,23]            1  1000
## resid[9,24]            1  1000
## resid[9,25]            1  1000
## resid[9,26]            1  1000
## resid[9,27]            1   750
## resid[9,28]            1   220
```

```
## resid[9,29]            1  1000
## resid[9,30]            1  1000
## resid[9,31]            1  1000
## resid[9,32]            1  1000
## resid[9,33]            1   630
## resid[9,34]            1  1000
## resid[9,35]            1   630
## resid[10,1]            1   820
## resid[10,2]            1   470
## resid[10,3]            1   920
## resid[10,4]            1  1000
## resid[10,5]            1   940
## resid[10,6]            1   220
## resid[10,7]            1  1000
## resid[10,8]            1  1000
## resid[10,9]            1  1000
## resid[10,10]           1  1000
## resid[10,11]           1   780
## resid[10,12]           1  1000
## resid[10,13]           1  1000
## resid[10,14]           1  1000
## resid[10,15]           1  1000
## resid[10,16]           1  1000
## resid[10,17]           1  1000
## resid[10,18]           1  1000
## resid[10,19]           1  1000
## resid[10,20]           1  1000
## resid[10,21]           1  1000
## resid[10,22]           1  1000
## resid[10,23]           1  1000
## resid[10,24]           1   930
## resid[10,25]           1  1000
## resid[10,26]           1   830
## resid[10,27]           1  1000
## resid[10,28]           1  1000
## resid[10,29]           1  1000
## resid[10,30]           1  1000
## resid[10,31]           1  1000
## resid[10,32]           1  1000
## resid[10,33]           1  1000
## resid[10,34]           1  1000
## resid[10,35]           1   910
## resid[11,1]            1   620
## resid[11,2]            1  1000
## resid[11,3]            1   870
## resid[11,4]            1  1000
## resid[11,5]            1  1000
## resid[11,6]            1  1000
## resid[11,7]            1  1000
## resid[11,8]            1  1000
## resid[11,9]            1  1000
## resid[11,10]           1  1000
## resid[11,11]           1   910
## resid[11,12]           1  1000
```

```
## resid[11,13]           1  1000
## resid[11,14]           1  1000
## resid[11,15]           1  1000
## resid[11,16]           1   270
## resid[11,17]           1   380
## resid[11,18]           1   340
## resid[11,19]           1  1000
## resid[11,20]           1   600
## resid[11,21]           1  1000
## resid[11,22]           1  1000
## resid[11,23]           1   490
## resid[11,24]           1   580
## resid[11,25]           1  1000
## resid[11,26]           1  1000
## resid[11,27]           1  1000
## resid[11,28]           1   340
## resid[11,29]           1   550
## resid[11,30]           1  1000
## resid[11,31]           1  1000
## resid[11,32]           1  1000
## resid[11,33]           1   200
## resid[11,34]           1   480
## resid[11,35]           1   240
## resid[12,1]            1   990
## resid[12,2]            1  1000
## resid[12,3]            1  1000
## resid[12,4]            1  1000
## resid[12,5]            1  1000
## resid[12,6]            1  1000
## resid[12,7]            1   670
## resid[12,8]            1   400
## resid[12,9]            1  1000
## resid[12,10]           1   700
## resid[12,11]           1  1000
## resid[12,12]           1  1000
## resid[12,13]           1  1000
## resid[12,14]           1  1000
## resid[12,15]           1   510
## resid[12,16]           1  1000
## resid[12,17]           1  1000
## resid[12,18]           1  1000
## resid[12,19]           1  1000
## resid[12,20]           1  1000
## resid[12,21]           1  1000
## resid[12,22]           1  1000
## resid[12,23]           1  1000
## resid[12,24]           1   330
## resid[12,25]           1  1000
## resid[12,26]           1  1000
## resid[12,27]           1  1000
## resid[12,28]           1   440
## resid[12,29]           1  1000
## resid[12,30]           1  1000
## resid[12,31]           1  1000
```

```
## resid[12,32]           1   400
## resid[12,33]           1  1000
## resid[12,34]           1   450
## resid[12,35]           1  1000
## resid[13,1]            1  1000
## resid[13,2]            1  1000
## resid[13,3]            1  1000
## resid[13,4]            1  1000
## resid[13,5]            1  1000
## resid[13,6]            1   860
## resid[13,7]            1  1000
## resid[13,8]            1  1000
## resid[13,9]            1  1000
## resid[13,10]           1  1000
## resid[13,11]           1   370
## resid[13,12]           1  1000
## resid[13,13]           1  1000
## resid[13,14]           1  1000
## resid[13,15]           1   410
## resid[13,16]           1   550
## resid[13,17]           1   400
## resid[13,18]           1   680
## resid[13,19]           1  1000
## resid[13,20]           1   570
## resid[13,21]           1  1000
## resid[13,22]           1  1000
## resid[13,23]           1  1000
## resid[13,24]           1  1000
## resid[13,25]           1  1000
## resid[13,26]           1  1000
## resid[13,27]           1  1000
## resid[13,28]           1  1000
## resid[13,29]           1   290
## resid[13,30]           1  1000
## resid[13,31]           1  1000
## resid[13,32]           1   650
## resid[13,33]           1  1000
## resid[13,34]           1  1000
## resid[13,35]           1  1000
## resid[14,1]            1  1000
## resid[14,2]            1  1000
## resid[14,3]            1   700
## resid[14,4]            1  1000
## resid[14,5]            1  1000
## resid[14,6]            1   890
## resid[14,7]            1  1000
## resid[14,8]            1  1000
## resid[14,9]            1   710
## resid[14,10]           1  1000
## resid[14,11]           1  1000
## resid[14,12]           1  1000
## resid[14,13]           1   840
## resid[14,14]           1  1000
## resid[14,15]           1  1000
```

```
## resid[14,16]            1  1000
## resid[14,17]            1   620
## resid[14,18]            1  1000
## resid[14,19]            1   690
## resid[14,20]            1   570
## resid[14,21]            1   850
## resid[14,22]            1   350
## resid[14,23]            1  1000
## resid[14,24]            1  1000
## resid[14,25]            1  1000
## resid[14,26]            1   890
## resid[14,27]            1  1000
## resid[14,28]            1   330
## resid[14,29]            1  1000
## resid[14,30]            1  1000
## resid[14,31]            1   440
## resid[14,32]            1   810
## resid[14,33]            1  1000
## resid[14,34]            1  1000
## resid[14,35]            1  1000
## Captures.pred[1,1]      1  1000
## Captures.pred[1,2]      1  1000
## Captures.pred[1,3]      1   300
## Captures.pred[1,4]      1  1000
## Captures.pred[1,5]      1  1000
## Captures.pred[1,6]      1  1000
## Captures.pred[1,7]      1   610
## Captures.pred[1,8]      1   710
## Captures.pred[1,9]      1  1000
## Captures.pred[1,10]     1  1000
## Captures.pred[1,11]     1  1000
## Captures.pred[1,12]     1   900
## Captures.pred[1,13]     1   880
## Captures.pred[1,14]     1   930
## Captures.pred[1,15]     1  1000
## Captures.pred[1,16]     1   550
## Captures.pred[1,17]     1  1000
## Captures.pred[1,18]     1  1000
## Captures.pred[1,19]     1   590
## Captures.pred[1,20]     1   300
## Captures.pred[1,21]     1  1000
## Captures.pred[1,22]     1   750
## Captures.pred[1,23]     1  1000
## Captures.pred[1,24]     1   530
## Captures.pred[1,25]     1  1000
## Captures.pred[1,26]     1  1000
## Captures.pred[1,27]     1  1000
## Captures.pred[1,28]     1  1000
## Captures.pred[1,29]     1  1000
## Captures.pred[1,30]     1  1000
## Captures.pred[1,31]     1  1000
## Captures.pred[1,32]     1   940
## Captures.pred[1,33]     1  1000
## Captures.pred[1,34]     1   870
```

```
## Captures.pred[1,35]     1   490
## Captures.pred[2,1]      1  1000
## Captures.pred[2,2]      1   910
## Captures.pred[2,3]      1   700
## Captures.pred[2,4]      1   640
## Captures.pred[2,5]      1  1000
## Captures.pred[2,6]      1  1000
## Captures.pred[2,7]      1  1000
## Captures.pred[2,8]      1  1000
## Captures.pred[2,9]      1  1000
## Captures.pred[2,10]     1  1000
## Captures.pred[2,11]     1  1000
## Captures.pred[2,12]     1  1000
## Captures.pred[2,13]     1  1000
## Captures.pred[2,14]     1   430
## Captures.pred[2,15]     1  1000
## Captures.pred[2,16]     1   490
## Captures.pred[2,17]     1  1000
## Captures.pred[2,18]     1  1000
## Captures.pred[2,19]     1  1000
## Captures.pred[2,20]     1  1000
## Captures.pred[2,21]     1  1000
## Captures.pred[2,22]     1   940
## Captures.pred[2,23]     1  1000
## Captures.pred[2,24]     1  1000
## Captures.pred[2,25]     1  1000
## Captures.pred[2,26]     1  1000
## Captures.pred[2,27]     1   530
## Captures.pred[2,28]     1   560
## Captures.pred[2,29]     1  1000
## Captures.pred[2,30]     1  1000
## Captures.pred[2,31]     1  1000
## Captures.pred[2,32]     1  1000
## Captures.pred[2,33]     1  1000
## Captures.pred[2,34]     1  1000
## Captures.pred[2,35]     1  1000
## Captures.pred[3,1]      1   830
## Captures.pred[3,2]      1   890
## Captures.pred[3,3]      1  1000
## Captures.pred[3,4]      1  1000
## Captures.pred[3,5]      1  1000
## Captures.pred[3,6]      1  1000
## Captures.pred[3,7]      1  1000
## Captures.pred[3,8]      1  1000
## Captures.pred[3,9]      1  1000
## Captures.pred[3,10]     1  1000
## Captures.pred[3,11]     1  1000
## Captures.pred[3,12]     1   410
## Captures.pred[3,13]     1   670
## Captures.pred[3,14]     1   640
## Captures.pred[3,15]     1   320
## Captures.pred[3,16]     1  1000
## Captures.pred[3,17]     1   720
## Captures.pred[3,18]     1  1000
```

```
## Captures.pred[3,19]     1  1000
## Captures.pred[3,20]     1  1000
## Captures.pred[3,21]     1  1000
## Captures.pred[3,22]     1  1000
## Captures.pred[3,23]     1   480
## Captures.pred[3,24]     1  1000
## Captures.pred[3,25]     1  1000
## Captures.pred[3,26]     1  1000
## Captures.pred[3,27]     1  1000
## Captures.pred[3,28]     1   480
## Captures.pred[3,29]     1  1000
## Captures.pred[3,30]     1   360
## Captures.pred[3,31]     1  1000
## Captures.pred[3,32]     1  1000
## Captures.pred[3,33]     1  1000
## Captures.pred[3,34]     1  1000
## Captures.pred[3,35]     1  1000
## Captures.pred[4,1]      1   810
## Captures.pred[4,2]      1   550
## Captures.pred[4,3]      1   290
## Captures.pred[4,4]      1  1000
## Captures.pred[4,5]      1  1000
## Captures.pred[4,6]      1  1000
## Captures.pred[4,7]      1   460
## Captures.pred[4,8]      1   700
## Captures.pred[4,9]      1  1000
## Captures.pred[4,10]     1  1000
## Captures.pred[4,11]     1   690
## Captures.pred[4,12]     1  1000
## Captures.pred[4,13]     1  1000
## Captures.pred[4,14]     1   690
## Captures.pred[4,15]     1   480
## Captures.pred[4,16]     1  1000
## Captures.pred[4,17]     1  1000
## Captures.pred[4,18]     1   910
## Captures.pred[4,19]     1  1000
## Captures.pred[4,20]     1   530
## Captures.pred[4,21]     1  1000
## Captures.pred[4,22]     1   850
## Captures.pred[4,23]     1   320
## Captures.pred[4,24]     1  1000
## Captures.pred[4,25]     1  1000
## Captures.pred[4,26]     1   850
## Captures.pred[4,27]     1  1000
## Captures.pred[4,28]     1   160
## Captures.pred[4,29]     1  1000
## Captures.pred[4,30]     1   640
## Captures.pred[4,31]     1  1000
## Captures.pred[4,32]     1   690
## Captures.pred[4,33]     1   430
## Captures.pred[4,34]     1  1000
## Captures.pred[4,35]     1   670
## Captures.pred[5,1]      1  1000
## Captures.pred[5,2]      1  1000
```

```
## Captures.pred[5,3]      1   540
## Captures.pred[5,4]      1   940
## Captures.pred[5,5]      1   770
## Captures.pred[5,6]      1   570
## Captures.pred[5,7]      1  1000
## Captures.pred[5,8]      1   620
## Captures.pred[5,9]      1   730
## Captures.pred[5,10]     1  1000
## Captures.pred[5,11]     1   980
## Captures.pred[5,12]     1   410
## Captures.pred[5,13]     1   390
## Captures.pred[5,14]     1  1000
## Captures.pred[5,15]     1  1000
## Captures.pred[5,16]     1   800
## Captures.pred[5,17]     1   550
## Captures.pred[5,18]     1  1000
## Captures.pred[5,19]     1  1000
## Captures.pred[5,20]     1  1000
## Captures.pred[5,21]     1   400
## Captures.pred[5,22]     1   620
## Captures.pred[5,23]     1   500
## Captures.pred[5,24]     1   360
## Captures.pred[5,25]     1  1000
## Captures.pred[5,26]     1   740
## Captures.pred[5,27]     1  1000
## Captures.pred[5,28]     1   190
## Captures.pred[5,29]     1  1000
## Captures.pred[5,30]     1   210
## Captures.pred[5,31]     1  1000
## Captures.pred[5,32]     1  1000
## Captures.pred[5,33]     1   930
## Captures.pred[5,34]     1  1000
## Captures.pred[5,35]     1  1000
## Captures.pred[6,1]      1  1000
## Captures.pred[6,2]      1  1000
## Captures.pred[6,3]      1  1000
## Captures.pred[6,4]      1  1000
## Captures.pred[6,5]      1   510
## Captures.pred[6,6]      1  1000
## Captures.pred[6,7]      1   800
## Captures.pred[6,8]      1  1000
## Captures.pred[6,9]      1   550
## Captures.pred[6,10]     1   740
## Captures.pred[6,11]     1  1000
## Captures.pred[6,12]     1  1000
## Captures.pred[6,13]     1   430
## Captures.pred[6,14]     1  1000
## Captures.pred[6,15]     1  1000
## Captures.pred[6,16]     1  1000
## Captures.pred[6,17]     1  1000
## Captures.pred[6,18]     1  1000
## Captures.pred[6,19]     1   720
## Captures.pred[6,20]     1   230
## Captures.pred[6,21]     1   710
```

```
## Captures.pred[6,22]     1  1000
## Captures.pred[6,23]     1  1000
## Captures.pred[6,24]     1  1000
## Captures.pred[6,25]     1  1000
## Captures.pred[6,26]     1   460
## Captures.pred[6,27]     1  1000
## Captures.pred[6,28]     1  1000
## Captures.pred[6,29]     1   480
## Captures.pred[6,30]     1  1000
## Captures.pred[6,31]     1  1000
## Captures.pred[6,32]     1  1000
## Captures.pred[6,33]     1  1000
## Captures.pred[6,34]     1  1000
## Captures.pred[6,35]     1  1000
## Captures.pred[7,1]      1   410
## Captures.pred[7,2]      1  1000
## Captures.pred[7,3]      1  1000
## Captures.pred[7,4]      1  1000
## Captures.pred[7,5]      1  1000
## Captures.pred[7,6]      1  1000
## Captures.pred[7,7]      1  1000
## Captures.pred[7,8]      1  1000
## Captures.pred[7,9]      1  1000
## Captures.pred[7,10]     1   520
## Captures.pred[7,11]     1  1000
## Captures.pred[7,12]     1  1000
## Captures.pred[7,13]     1  1000
## Captures.pred[7,14]     1  1000
## Captures.pred[7,15]     1  1000
## Captures.pred[7,16]     1   860
## Captures.pred[7,17]     1  1000
## Captures.pred[7,18]     1  1000
## Captures.pred[7,19]     1   660
## Captures.pred[7,20]     1  1000
## Captures.pred[7,21]     1  1000
## Captures.pred[7,22]     1  1000
## Captures.pred[7,23]     1  1000
## Captures.pred[7,24]     1  1000
## Captures.pred[7,25]     1  1000
## Captures.pred[7,26]     1   830
## Captures.pred[7,27]     1  1000
## Captures.pred[7,28]     1   890
## Captures.pred[7,29]     1   820
## Captures.pred[7,30]     1  1000
## Captures.pred[7,31]     1   210
## Captures.pred[7,32]     1   970
## Captures.pred[7,33]     1  1000
## Captures.pred[7,34]     1   850
## Captures.pred[7,35]     1  1000
## Captures.pred[8,1]      1  1000
## Captures.pred[8,2]      1  1000
## Captures.pred[8,3]      1  1000
## Captures.pred[8,4]      1  1000
## Captures.pred[8,5]      1  1000
```

```
## Captures.pred[8,6]      1   790
## Captures.pred[8,7]      1   500
## Captures.pred[8,8]      1   720
## Captures.pred[8,9]      1   970
## Captures.pred[8,10]     1   550
## Captures.pred[8,11]     1   500
## Captures.pred[8,12]     1   210
## Captures.pred[8,13]     1  1000
## Captures.pred[8,14]     1  1000
## Captures.pred[8,15]     1   850
## Captures.pred[8,16]     1  1000
## Captures.pred[8,17]     1   970
## Captures.pred[8,18]     1  1000
## Captures.pred[8,19]     1   270
## Captures.pred[8,20]     1  1000
## Captures.pred[8,21]     1  1000
## Captures.pred[8,22]     1  1000
## Captures.pred[8,23]     1  1000
## Captures.pred[8,24]     1  1000
## Captures.pred[8,25]     1   590
## Captures.pred[8,26]     1  1000
## Captures.pred[8,27]     1  1000
## Captures.pred[8,28]     1   860
## Captures.pred[8,29]     1  1000
## Captures.pred[8,30]     1  1000
## Captures.pred[8,31]     1  1000
## Captures.pred[8,32]     1  1000
## Captures.pred[8,33]     1   380
## Captures.pred[8,34]     1   930
## Captures.pred[8,35]     1   660
## Captures.pred[9,1]      1   880
## Captures.pred[9,2]      1  1000
## Captures.pred[9,3]      1  1000
## Captures.pred[9,4]      1   290
## Captures.pred[9,5]      1   590
## Captures.pred[9,6]      1   270
## Captures.pred[9,7]      1  1000
## Captures.pred[9,8]      1  1000
## Captures.pred[9,9]      1   390
## Captures.pred[9,10]     1   780
## Captures.pred[9,11]     1  1000
## Captures.pred[9,12]     1   350
## Captures.pred[9,13]     1  1000
## Captures.pred[9,14]     1  1000
## Captures.pred[9,15]     1   600
## Captures.pred[9,16]     1  1000
## Captures.pred[9,17]     1  1000
## Captures.pred[9,18]     1  1000
## Captures.pred[9,19]     1   640
## Captures.pred[9,20]     1  1000
## Captures.pred[9,21]     1  1000
## Captures.pred[9,22]     1  1000
## Captures.pred[9,23]     1  1000
## Captures.pred[9,24]     1  1000
```

```
## Captures.pred[9,25]     1  1000
## Captures.pred[9,26]     1  1000
## Captures.pred[9,27]     1   750
## Captures.pred[9,28]     1   220
## Captures.pred[9,29]     1  1000
## Captures.pred[9,30]     1  1000
## Captures.pred[9,31]     1  1000
## Captures.pred[9,32]     1  1000
## Captures.pred[9,33]     1   380
## Captures.pred[9,34]     1  1000
## Captures.pred[9,35]     1   550
## Captures.pred[10,1]     1   780
## Captures.pred[10,2]     1   560
## Captures.pred[10,3]     1   710
## Captures.pred[10,4]     1  1000
## Captures.pred[10,5]     1  1000
## Captures.pred[10,6]     1   260
## Captures.pred[10,7]     1  1000
## Captures.pred[10,8]     1  1000
## Captures.pred[10,9]     1   690
## Captures.pred[10,10]    1  1000
## Captures.pred[10,11]    1  1000
## Captures.pred[10,12]    1  1000
## Captures.pred[10,13]    1  1000
## Captures.pred[10,14]    1  1000
## Captures.pred[10,15]    1   660
## Captures.pred[10,16]    1   770
## Captures.pred[10,17]    1  1000
## Captures.pred[10,18]    1  1000
## Captures.pred[10,19]    1  1000
## Captures.pred[10,20]    1  1000
## Captures.pred[10,21]    1  1000
## Captures.pred[10,22]    1  1000
## Captures.pred[10,23]    1  1000
## Captures.pred[10,24]    1  1000
## Captures.pred[10,25]    1  1000
## Captures.pred[10,26]    1   830
## Captures.pred[10,27]    1  1000
## Captures.pred[10,28]    1  1000
## Captures.pred[10,29]    1  1000
## Captures.pred[10,30]    1  1000
## Captures.pred[10,31]    1  1000
## Captures.pred[10,32]    1  1000
## Captures.pred[10,33]    1  1000
## Captures.pred[10,34]    1   790
## Captures.pred[10,35]    1  1000
## Captures.pred[11,1]     1   520
## Captures.pred[11,2]     1   680
## Captures.pred[11,3]     1   870
## Captures.pred[11,4]     1  1000
## Captures.pred[11,5]     1  1000
## Captures.pred[11,6]     1  1000
## Captures.pred[11,7]     1  1000
## Captures.pred[11,8]     1  1000
```

```
## Captures.pred[11,9]     1  1000
## Captures.pred[11,10]    1  1000
## Captures.pred[11,11]    1   910
## Captures.pred[11,12]    1  1000
## Captures.pred[11,13]    1  1000
## Captures.pred[11,14]    1  1000
## Captures.pred[11,15]    1  1000
## Captures.pred[11,16]    1   270
## Captures.pred[11,17]    1   380
## Captures.pred[11,18]    1   300
## Captures.pred[11,19]    1  1000
## Captures.pred[11,20]    1   600
## Captures.pred[11,21]    1  1000
## Captures.pred[11,22]    1  1000
## Captures.pred[11,23]    1   820
## Captures.pred[11,24]    1   800
## Captures.pred[11,25]    1  1000
## Captures.pred[11,26]    1  1000
## Captures.pred[11,27]    1  1000
## Captures.pred[11,28]    1   350
## Captures.pred[11,29]    1   520
## Captures.pred[11,30]    1  1000
## Captures.pred[11,31]    1  1000
## Captures.pred[11,32]    1  1000
## Captures.pred[11,33]    1   280
## Captures.pred[11,34]    1   940
## Captures.pred[11,35]    1   240
## Captures.pred[12,1]     1   670
## Captures.pred[12,2]     1  1000
## Captures.pred[12,3]     1  1000
## Captures.pred[12,4]     1  1000
## Captures.pred[12,5]     1  1000
## Captures.pred[12,6]     1  1000
## Captures.pred[12,7]     1   490
## Captures.pred[12,8]     1   520
## Captures.pred[12,9]     1  1000
## Captures.pred[12,10]    1   700
## Captures.pred[12,11]    1  1000
## Captures.pred[12,12]    1  1000
## Captures.pred[12,13]    1  1000
## Captures.pred[12,14]    1  1000
## Captures.pred[12,15]    1   510
## Captures.pred[12,16]    1  1000
## Captures.pred[12,17]    1  1000
## Captures.pred[12,18]    1  1000
## Captures.pred[12,19]    1   960
## Captures.pred[12,20]    1  1000
## Captures.pred[12,21]    1  1000
## Captures.pred[12,22]    1  1000
## Captures.pred[12,23]    1  1000
## Captures.pred[12,24]    1   210
## Captures.pred[12,25]    1  1000
## Captures.pred[12,26]    1  1000
## Captures.pred[12,27]    1  1000
```

```
## Captures.pred[12,28]    1   320
## Captures.pred[12,29]    1  1000
## Captures.pred[12,30]    1  1000
## Captures.pred[12,31]    1  1000
## Captures.pred[12,32]    1   390
## Captures.pred[12,33]    1  1000
## Captures.pred[12,34]    1  1000
## Captures.pred[12,35]    1  1000
## Captures.pred[13,1]     1  1000
## Captures.pred[13,2]     1  1000
## Captures.pred[13,3]     1  1000
## Captures.pred[13,4]     1  1000
## Captures.pred[13,5]     1  1000
## Captures.pred[13,6]     1   860
## Captures.pred[13,7]     1  1000
## Captures.pred[13,8]     1  1000
## Captures.pred[13,9]     1  1000
## Captures.pred[13,10]    1  1000
## Captures.pred[13,11]    1   370
## Captures.pred[13,12]    1  1000
## Captures.pred[13,13]    1   730
## Captures.pred[13,14]    1  1000
## Captures.pred[13,15]    1   410
## Captures.pred[13,16]    1   550
## Captures.pred[13,17]    1   420
## Captures.pred[13,18]    1   350
## Captures.pred[13,19]    1  1000
## Captures.pred[13,20]    1   550
## Captures.pred[13,21]    1  1000
## Captures.pred[13,22]    1  1000
## Captures.pred[13,23]    1  1000
## Captures.pred[13,24]    1  1000
## Captures.pred[13,25]    1  1000
## Captures.pred[13,26]    1  1000
## Captures.pred[13,27]    1  1000
## Captures.pred[13,28]    1  1000
## Captures.pred[13,29]    1   290
## Captures.pred[13,30]    1  1000
## Captures.pred[13,31]    1  1000
## Captures.pred[13,32]    1   840
## Captures.pred[13,33]    1  1000
## Captures.pred[13,34]    1  1000
## Captures.pred[13,35]    1  1000
## Captures.pred[14,1]     1  1000
## Captures.pred[14,2]     1  1000
## Captures.pred[14,3]     1  1000
## Captures.pred[14,4]     1  1000
## Captures.pred[14,5]     1  1000
## Captures.pred[14,6]     1   570
## Captures.pred[14,7]     1   870
## Captures.pred[14,8]     1  1000
## Captures.pred[14,9]     1   630
## Captures.pred[14,10]    1  1000
## Captures.pred[14,11]    1  1000
```

```
## Captures.pred[14,12]    1  1000
## Captures.pred[14,13]    1  1000
## Captures.pred[14,14]    1  1000
## Captures.pred[14,15]    1  1000
## Captures.pred[14,16]    1  1000
## Captures.pred[14,17]    1   590
## Captures.pred[14,18]    1  1000
## Captures.pred[14,19]    1   590
## Captures.pred[14,20]    1   450
## Captures.pred[14,21]    1  1000
## Captures.pred[14,22]    1   370
## Captures.pred[14,23]    1  1000
## Captures.pred[14,24]    1  1000
## Captures.pred[14,25]    1  1000
## Captures.pred[14,26]    1  1000
## Captures.pred[14,27]    1  1000
## Captures.pred[14,28]    1   490
## Captures.pred[14,29]    1  1000
## Captures.pred[14,30]    1  1000
## Captures.pred[14,31]    1   630
## Captures.pred[14,32]    1   850
## Captures.pred[14,33]    1  1000
## Captures.pred[14,34]    1  1000
## Captures.pred[14,35]    1  1000
## deviance                1  1000
##
## For each parameter, n.eff is a crude measure of effective sample size,
## and Rhat is the potential scale reduction factor (at convergence, Rhat=1).
##
## DIC info (using the rule, pD = Dbar-Dhat)
## pD = 17.8 and DIC = 15320.1
## DIC is an estimate of expected predictive error (lower deviance is better).
```

```
#Rhat
summary(Rhat <- (ResulDef$summary[, "Rhat"]))
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  0.9995  1.0005  1.0017  1.0028  1.0036  1.0479
```

```
summary(ResulDef$summary[, "n.eff"])
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   160.0   750.0  1000.0   859.1  1000.0  1000.0
```

```
ResulDef$DIC
```

```
## [1] 15320.1
```

```
ResulDef$pD
```

```
## [1] 17.753
```

```r
#MSE
mean(ResulDef$mean$resid)
```

```
## [1] 758.7237
```