Tarea 2018/11/07

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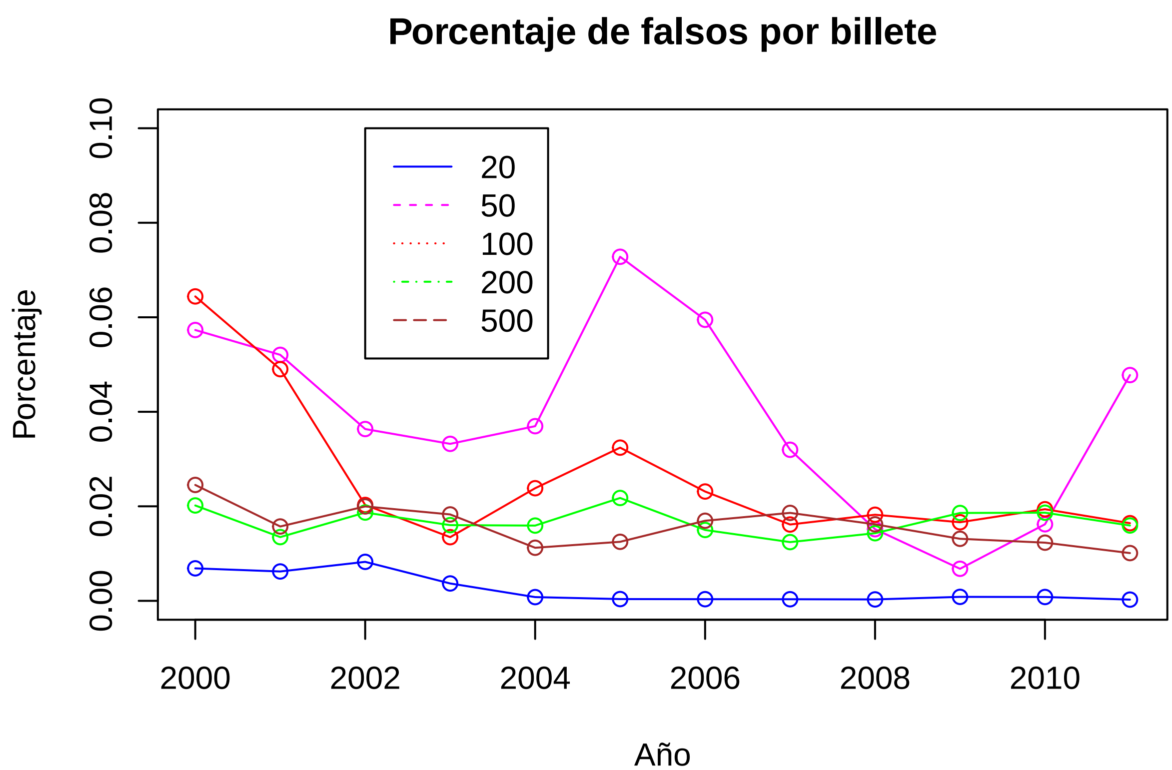
Carga de Datos

Estos son los datos cargados en R y los que manipularemos para presentar los resultados del siguiente documento.



Modelo Original del Examen

```
## model {
##  for(i in 1:n) {
##      y[i] ~ dbin(p[i], ne[i])
##      #mu[i] <- ne[i]*p[i]
##      #Liga logistica
##      #logit(p[i])<-beta[1]+beta[2]*x2+beta[3]*x3+beta[4]*x4+beta[5]*x5
##      eta[i] <- beta[1] + beta[2]*x2[i] + beta[3]*x3[i] + beta[4]*x4[i] + beta[5]*x5[i]
##      p[i] <- exp(eta[i])/(1+exp(eta[i]))
##  }
```

```
##  for (j in 1:5) {
##      beta[j] ~ dnorm(0, 0.001)
##  }
##  #Preds 1
##  for (i in 1:n) {
##      yf1[i] ~ dbin(p[i], ne[i])
##  }
## }
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 60
##    Unobserved stochastic nodes: 65
##    Total graph size: 584
##
## Initializing model
```

DIC

```
## [1] 1359
```

```
## [1] 1296.645
```

Pseudo R^2

```
## [1] 0.5460108
```

```
## [1] 0.5547716
```

Modelo A

Utilicé la siguiente fórmula:

$$\alpha^\star = \alpha + \overline{\beta}_1 + \overline{\beta}_2 + \overline{\beta}_3 + \overline{\beta}_4 + \overline{\beta}_5$$

```
## model {
##  for(i in 1:n) {
##      y[i] ~ dbin(p[i], ne[i])
##      #mu[i] <- ne[i]*p[i]
##      #Liga logistica
##      #logit(p[i]<-beta[1]+beta[2]*x2+beta[3]*x3+beta[4]*x4+beta[5]*x5
##      eta[i] <- alpha + beta[1]*x1[i] + beta[2]*x2[i] + beta[3]*x3[i] + beta[4]*x4[i] + beta[5]*x5[i]
##      p[i] <- exp(eta[i])/(1+exp(eta[i]))
##  }
##  alpha ~ dnorm(0, 0.001)
##  for (j in 1:5) {
##      beta[j] ~ dnorm(0, 0.001)
##  }
##  # Las primeras 4 betas
##  for (j in 1:5) {
##      beta_star[j] <- beta[j] - mean(beta[])
```

```
##  }
##  alpha_star <- alpha + mean(beta[])
##  #Preds 1
##  for (i in 1:n) {
##    etaf[i] <- alpha_star + beta_star[1]*x1[i] + beta_star[2]*x2[i] + beta_star[3]*x3[i] + beta_star[4
##    pf[i] <- exp(etaf[i])/(1+exp(etaf[i]))
##      yf1[i] ~ dbin(pf[i], ne[i])
##  }
## }
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 60
##    Unobserved stochastic nodes: 66
##    Total graph size: 927
##
## Initializing model
```

DIC

```
## [1] 1297
```

```
## [1] 1296.795
```

Pseudo R^2

```
## [1] 0.5544088
```

```
## [1] 0.5546933
```

Modelo B

```
## model {
##  for(i in 1:n) {
##      y[i] ~ dbin(p[i], ne[i])
##      #mu[i] <- ne[i]*p[i]
##      #Liga logistica
##      #logit(p[i]<-alpha+beta[1]*x1+beta[2]*x2+beta[3]*x3+beta[4]*x4+beta[5]*x5
##      eta[i] <- alpha + beta[1]*x1[i] + beta[2]*x2[i] + beta[3]*x3[i] + beta[4]*x4[i] + beta[5]*x5[i]
##      p[i] <- exp(eta[i])/(1+exp(eta[i]))
##  }
##  beta[1] ~ dnorm(0, 0.001)
##   tau.b ~ dgamma(0.001,0.001)
##  #mu.b[1] <- 0
##  #tau.y ~ dgamma(0.001,0.001)
##   g ~ dnorm(0,0.001)
##  for (j in 2:5) {
##    beta[j] ~ dnorm(mu.b[j],tau.b)
##    mu.b[j] <- g*beta[j-1]
##  }
##  alpha ~ dnorm(0, 0.001)
```

```
##  #Preds 1
##  for (i in 1:n) {
##      yf1[i] ~ dbin(p[i], ne[i])
##      #yf1[i] ~ dnorm(mu[i],tau.y)
##    #mu[i] <- beta[i]
##    #beta[i] ~ dnorm(mu.b[i],tau.b)
##     #mu.b[i] <- g*beta[i-1]
##  }
## }
```

```
## Compiling model graph
##    Resolving undeclared variables
##    Allocating nodes
## Graph information:
##    Observed stochastic nodes: 60
##    Unobserved stochastic nodes: 68
##    Total graph size: 711
##
## Initializing model
```

DIC

```
## [1] 1297
```

```
## [1] 1297.065
```

Pseudo R^2

```
## [1] 0.5540039
```

```
## [1] 0.5550149
```

Conclusión

No noté gran diferencia, sobretodo que tarda mucho más en converger, puesto que hay mucha variación en la pseudo-R^2 para el modelo A. Además propongo el modelo B, basándome en su ejercicio 7 “O”. Este tiene una mejora menor, pero al menos constante.

Modelo	DIC	Pseudo R^2
Examen (BUGS)	1359	0.5460108
Examen (Jags)	1299.438	0.5535071
Modelo A (BUGS)	1307	0.5531456
Modelo A (Jags)	1296.844	0.5516561
Modelo B (BUGS)	1297	0.5540039
Modelo B (Jags)	1296.625	0.5539002