

8UhU'[YbYfUh]b['a YV\Ub]ga

Hc'gYY\'ck'; Dg'W\bb'VY'i gYX'hc'dYfZcfa 'fY[f

DfcdYfh]Yg3

A J B 'dUfh]h]cb

8Yf]j]b['h\Uhd fYX]W]j Y'X]ghf]Vi h]cb ']g'U'g]a d'Y'Udd']W]h]cb 'cZXYXi W]b['W' bX]h]cbU' X]ghf]Vi h]cbg'Zfca 'U'f'c]b h'A J B"

: fca 'K _]dYX]Už]ZUb 'N'X]a Ybg]cbU'fUbXca 'j YW'cf' ']'g'dUfh]h]cbYX'Ug

$$= \begin{pmatrix} 1 \\ 2 \end{pmatrix} \quad \text{vi} \quad \text{si} \quad \text{s} \quad \begin{pmatrix} q \times 1 \\ (N - q) \times 1 \end{pmatrix},$$

UbX'UW'fX]b['m]UbX']'UfY'dUfh]h]cbYX'gž

$$= \begin{pmatrix} 1 \\ 2 \end{pmatrix} \quad \text{vi} \quad \begin{pmatrix} q \times 1 \\ (N - q) \times 1 \end{pmatrix}$$

UbX

$$\mathbf{A} = \begin{pmatrix} \mathbf{A}_{11} & \mathbf{A}_{12} \\ \mathbf{A}_{21} & \mathbf{A}_{22} \end{pmatrix} \quad \text{vi} \quad \text{si} \quad \text{s} \quad \begin{pmatrix} q \times q & q \times (N - q) \\ (N - q) \times q & (N - q) \times 1 \quad / \times \end{pmatrix},$$

DfYX]Wj Y`Yei Uh]cbg`]b`F

Bck`kY`↑ghZc``ck`h\Y`Zcfa i`Ug"

⌘]bhXfUk g`Uf

; D'\m dYfdUfUa YhYfg

GWJY

K \ Uh \ U

@_Y`]\ccX

K \Uh]g'h\Y`_Y`]\ccX3

hfg_]bXU`V]nUffY`h\Uh'k YfiY`VYYb`hU`_]b[`UVci h'df]cfg'UbX'dcghYf]cfg'k]h\ci h'Yj Yf
hU`_]b[`UVci h`_]`

: cf'bck žfYVc[b]nY`h\Uh'ci f`XUhU![YbYfUh]b['dfcVWgg']g`

ž

6UW_ħc'ci f

8Yf]j Uh]j Y!VUgYX'cdh]a]nUh]cb

h'Wb 'VY'i bgUh]gZm]b['hc ''Vfi hY!ZcfW''Ub 'cdh]a]nUh]cb 'Zcf'U'\mYfdUfUa YhYf''_Y' ž

<ck 'UVci h'i g]b['XYf]j Uh]j Y']bZcfa Uh]cb3': cf'h\Uhžh\Y'Zc``ck]b[']g'i gYŽi ``

Gc`i h]cb

<ck`a Ubm]hYfUh]cbg3

K \Uh'Y`gY3

<ck`UVci`h'h\Y`fUhY`cZ'XYWJmcZ'WçffY`Uh]cb`]b`hYfa`g`cZ'X]ghUbWY"

7cbg]XYf`h\Y`Zc``c

Df Zf Zf Zf Zf Zf Zf

7Ub`k Y`Xc`VYhYf3

K \Uh]Z`k Y`hU_Y`XYf]j Uh] Yg`k]h\`fYgdYWhc`~~0~~žUbX`Wc`a V]bY`k]h\`h\cgY`Zcf`~~8~~UbX`Zcfa
U`[fUX]Ybh3

$$K\ Yf\`bYYX` \cdot_n \equiv \frac{n}{\theta} "$$

ÆH\Y`X]U[cbU`']g`nYfc"

ÆH\Y`cZZX]U[cbU`Ybhf]Yg`cZ` \cdot_n`UfY`W`W`UhYX`Ug`Zc``ck`g"

inc $\theta(i, \)$

~~v~~ a

Gc`UW`i U``mik Y`\Uj Y` `k \YfY`h\Y`dfcXi`W`i]g`Wc`a dcbYbh`k]gYžUbX`
`Wc`bhU]bg`U`a Uhf]l`cZ`9i`W]XYUb`X]ghUbW`g"

H\Y'Zi`'XYf]j Uh]j Y

7ca d`Yh]b['h\Y`Z]h

FY!Vi]`X]b['h\Y`XUhJ`ei Ubh]h]Yg"

```
K <- exp(- D/out$par[1]) + diag(out$par[2], nrow(D))  
K1 <- solve(K)
```

5bX'h\Yb'h\Y`dfYX]W]j Y`ei Ubh]h]Yg"

DfYX]W]b[

Bck 'k]h\ 'WcgYX 'Zcfa '[fUX]Ybhg"

```
tic <- proc.time()[3]; counter <- 0  
outg <- oneoptim(c $\theta$ )
```

K \Uh'UVci h'bi a VYf'cZYj U'i Uh]cbg3

Df

