# LGCP with PC priors

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```r
library('mapmisc')

## Loading required package:  sp
## Loading required package:  raster

library("geostatsp")

## Loading required package:  Matrix

data('murder')
data('torontoPop')
```

```r
murderT = spTransform(murder, omerc(murder, angle = -20))
covList = list(pop = torontoPdens, inc = log(torontoIncome))

borderT = spTransform(torontoBorder, projection(murderT))
borderC = crop(borderT, extent(-12700, 7000, -7500, 3100))

## Loading required namespace:  rgeos

formula = ~inc + offset(pop, log = TRUE)
```

## LGCP with gamma priors on precision

```r
resG = lgcp(formula, data = murderT, grid = squareRaster(borderC, 30), covariates = covL
    border = borderC, buffer = 2000, priorCI = list(sd = c(0.05, 0.5), range = c(1,
        10) * 1000))
```
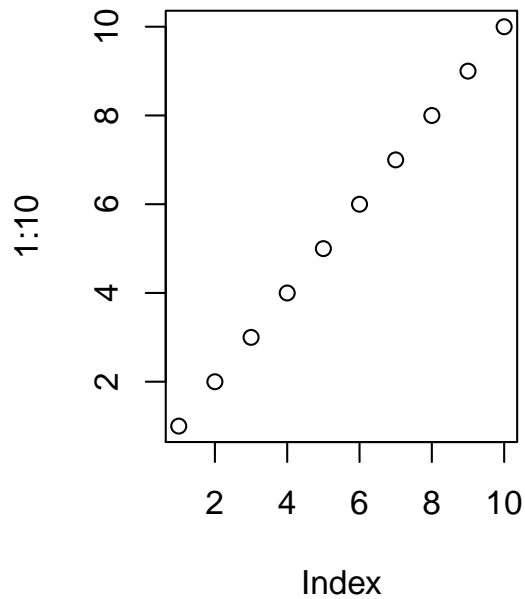
Figure 1: gamma prior

# LGCP with penalised complexity prior

$pr(sd > 1) = 0.05$ and $pr(phi < 0.2) = 0.95$

```
resP = lgcp(formula, data = murderT, grid = squareRaster(borderC, 30), covariates = covL
    border = borderC, buffer = 2000, priorCI = list(sd = c(u = 0.5, alpha = 0.05),
        range = c(1, 10) * 1000))
```

# Parameters

```
if(!is.null(resG$parameters))
    knitr::kable(resG$parameters$summary[,c(1,3,5)], digits=3)
```

```
if(!is.null(resP$parameters))
    knitr::kable(resP$parameters$summary[,c(1,3,5)], digits=3)
```
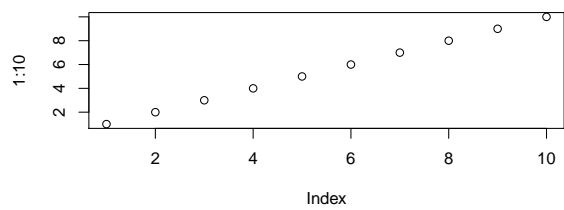
# Maps

Figure 2: Random effects and fitted values