Big carnivore crossing structure analysis

Script to run GLMM to look at the temporal variation in big carnivore use of underpasses and jumpouts We first separate out the day/season/annual counts by structure type and explore the influence of time of day (crep/day/night) for the day counts, season for the season counts and year for the annual counts. We also explore the influence of vehicles and humans. For all daily/seasonal underpass models only the day/season parameter is explored as the sample size for these models is too small to sample more parameters. The traffic varible is dropped from all models as it was extremely collinear with the day/season/year parameter.

Model structure: count (per structure) ~ crep/day/night or season + traffic volume + human use +

Location + random = sampling effort

big daily carnivores

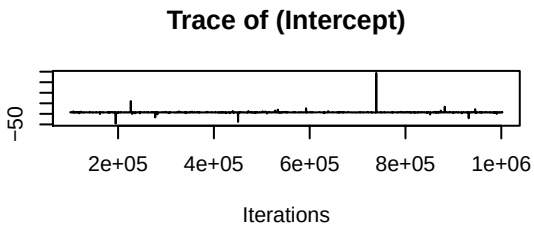
```
prior<-list(R=list(V=1, nu=0.002),
            G = list(G1 = list(V = 1, nu = 0.002)))

prioexp<- list(R = list(V = 1, nu=0.002), #residuals prior
               G = list(G1 = list(V = 1,nu= 0.02,alpha.mu=0,alpha.V=1000)))
```

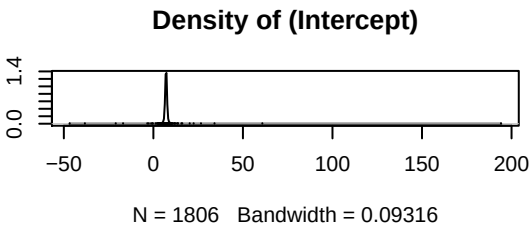
Underpass

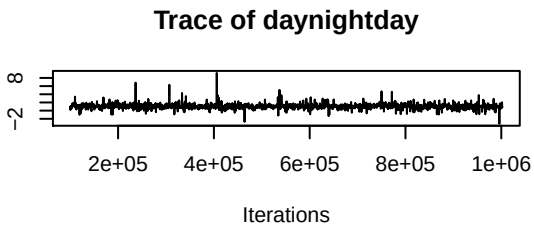
model summary and plots of IG prior and expanded prior respectively

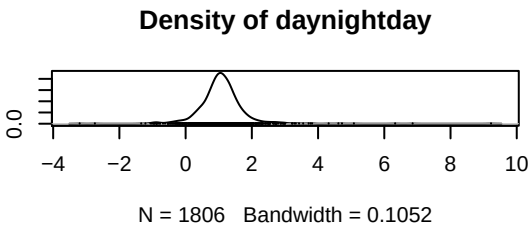
```
##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 70.38178
##
##  G-structure:  ~average.effort
```

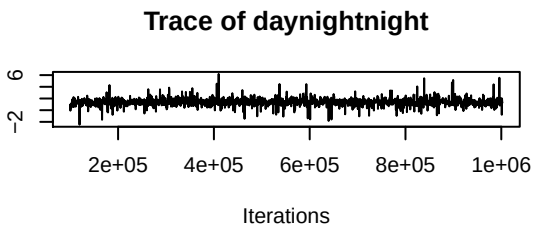
```
##
##                post.mean  l-95% CI u-95% CI eff.samp
## average.effort     103.7 0.0001298    4.906     1806
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units    0.4334  0.02538    1.291     1589
##
##  Location effects: Total ~ daynight
##
##               post.mean l-95% CI u-95% CI eff.samp   pMCMC
## (Intercept)      7.1565   5.4340   8.8475     1806 0.00997 **
## daynightday      1.0736  -0.2613   2.3392     1806 0.07641 .
## daynightnight    1.3856   0.0235   2.6621     1806 0.05094 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 70.39402
##
##  G-structure:  ~average.effort
##
##                post.mean  l-95% CI u-95% CI eff.samp
## average.effort     17684 1.464e-06    501.2     1806
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units    0.9733  0.03015     2.24     1806
##
##  Location effects: Total ~ daynight
##
##               post.mean l-95% CI u-95% CI eff.samp  pMCMC
## (Intercept)      7.9302  -4.1712  21.3834     1806 0.0919 .
## daynightday      1.0850  -0.3805   2.5335     1806 0.1063
## daynightnight    1.4006  -0.1891   2.9209     1806 0.0742 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

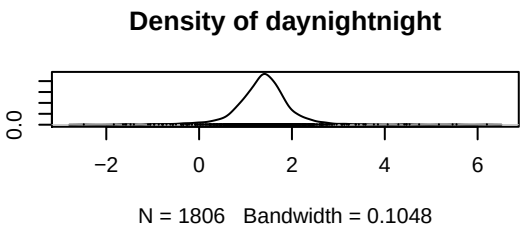

Trace of (Intercept)
−50
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

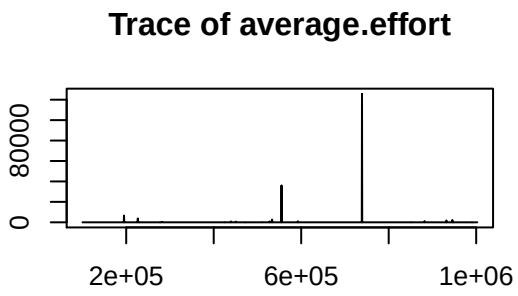

Density of (Intercept)
0.0
1.4
−50
0
50
100
150
200
N = 1806 Bandwidth = 0.09316

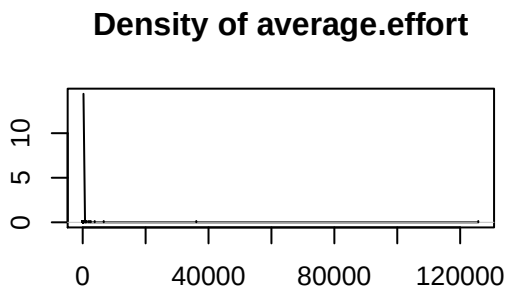

Trace of daynightday
−2
8
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

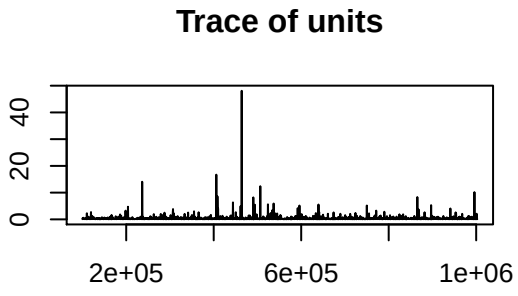

Density of daynightday
0.0
−4
−2
0
2
4
6
8
10
N = 1806 Bandwidth = 0.1052

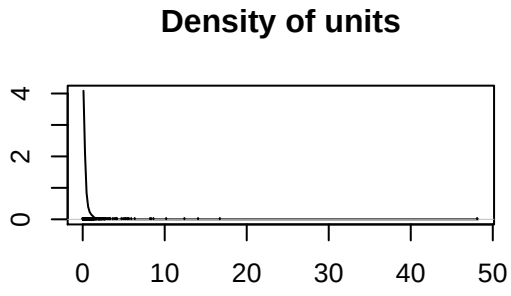

Trace of daynightnight
−2
6
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

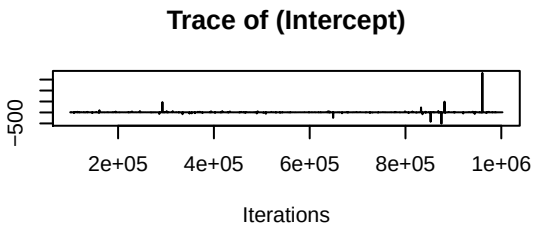

Density of daynightnight
0.0
−2
0
2
4
6
N = 1806 Bandwidth = 0.1048

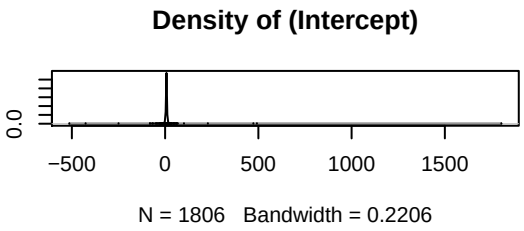

Trace of average.effort
0
80000
2e+05
6e+05
1e+06
Iterations

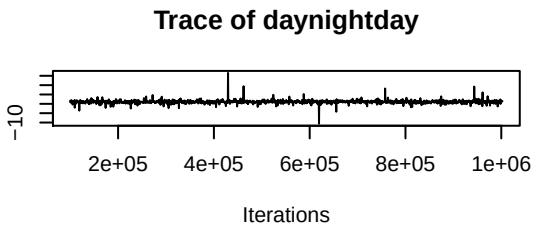

Density of average.effort
0
5
10
0
40000
80000
120000
N = 1806 Bandwidth = 0.02747

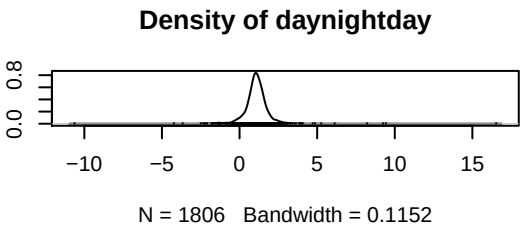

Trace of units
0
20
40
2e+05
6e+05
1e+06
Iterations

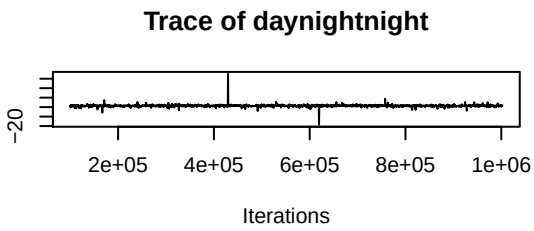

Density of units
0
2
4
0
10
20
30
40
50
N = 1806 Bandwidth = 0.04837

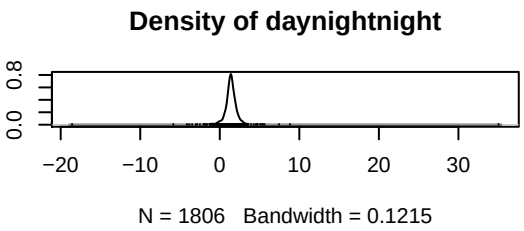

Trace of (Intercept)
−500
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

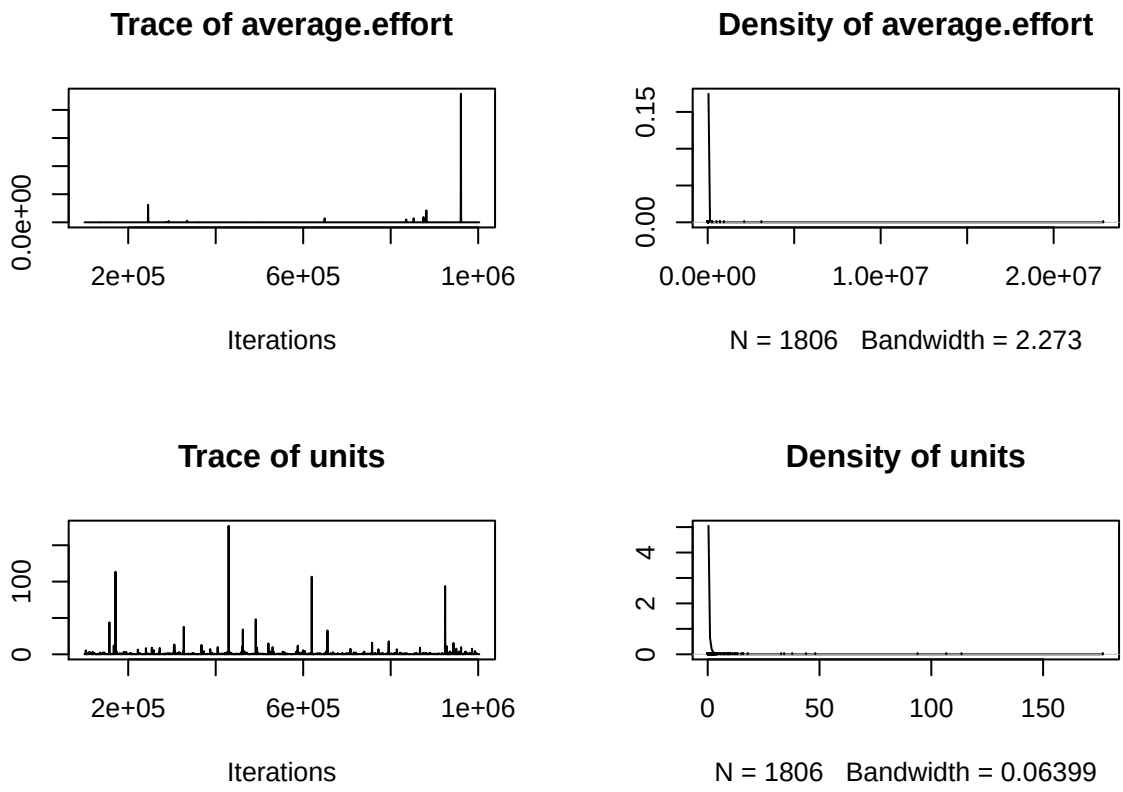

Density of (Intercept)
0.0
−500
0
500
1000
1500
N = 1806 Bandwidth = 0.2206


Trace of daynightday
−10
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations


Density of daynightday
0.0
0.8
−10
−5
0
5
10
15
N = 1806 Bandwidth = 0.1152


Trace of daynightnight
−20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations


Density of daynightnight
0.0
0.8
−20
−10
0
10
20
30
N = 1806 Bandwidth = 0.1215

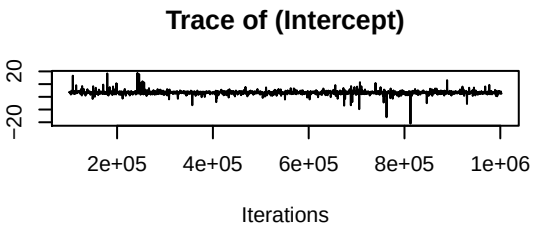


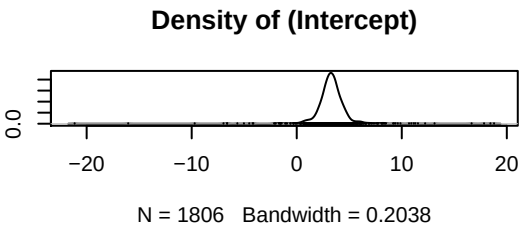
Jumpout

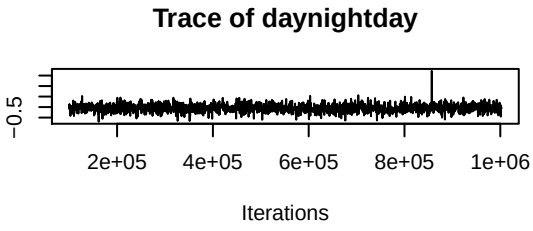
model summary and plots of IG prior and expanded prior respectively

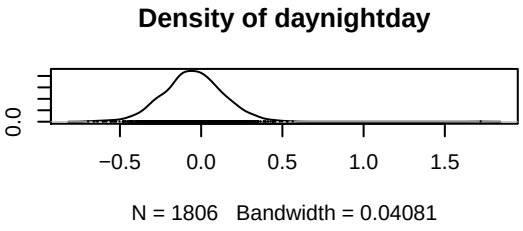
```
##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 105.3316
##
##  G-structure:  ~average.effort
##
##                post.mean l-95% CI u-95% CI eff.samp
## average.effort     8.054   0.1131    24.74     1553
##
##  R-structure:  ~units
##
##       post.mean  l-95% CI u-95% CI eff.samp
## units  0.006542 0.0002163  0.02097     1806
##
##  Location effects: Total ~ daynight + Location2 + daynight.human
##
##                         post.mean l-95% CI u-95% CI eff.samp   pMCMC
## (Intercept)              3.29587  0.59917  6.07678     1806 0.03433 *
## daynightday             -0.04839 -0.39831  0.33114     1806 0.76966
```

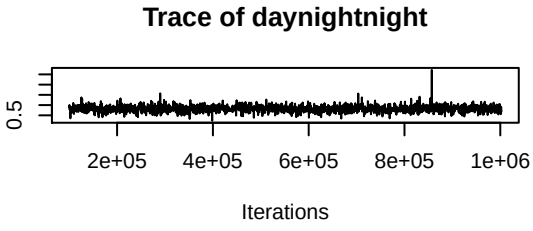
```
## daynightnight            0.82236  0.52648  1.14641     1806 < 6e-04 ***
## Location2Stewart Creek  -0.69973 -5.93903  4.54318     1806 0.57807
## daynight.human           1.19460  0.49835  1.81570     1806 0.00221 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 105.3113
##
##  G-structure:  ~average.effort
##
##                post.mean l-95% CI u-95% CI eff.samp
## average.effort     15.94   0.1167    49.32     1806
##
##  R-structure:  ~units
##
##       post.mean  l-95% CI u-95% CI eff.samp
## units  0.006362 0.0002283  0.02081     1340
##
##  Location effects: Total ~ daynight + Location2 + daynight.human
##
##                         post.mean l-95% CI u-95% CI eff.samp   pMCMC
## (Intercept)              3.34949 -0.42295  6.72976     1806 0.05537 .
## daynightday             -0.04503 -0.36607  0.30813     1806 0.78848
## daynightnight            0.82432  0.52889  1.10457     1806 < 6e-04 ***
## Location2Stewart Creek  -0.71302 -8.57331  4.87576     1806 0.69546
## daynight.human           1.19090  0.54921  1.77146     1806 0.00111 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

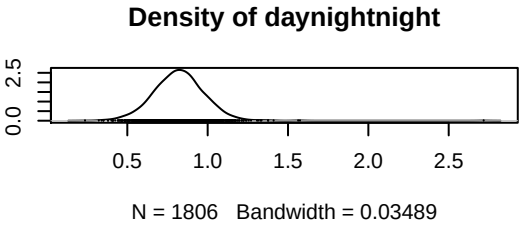

Trace of (Intercept)
−20
20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

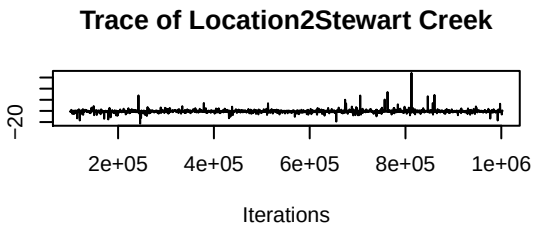

Density of (Intercept)
0.0
−20
−10
0
10
20
N = 1806 Bandwidth = 0.2038

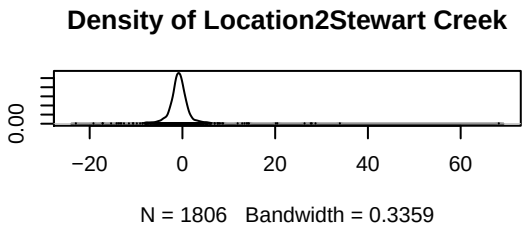

Trace of daynightday
−0.5
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

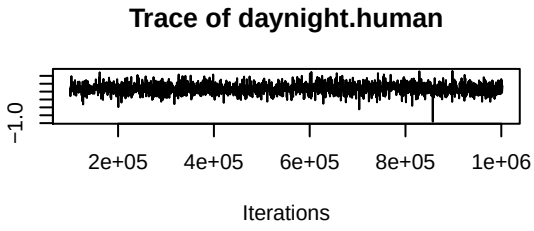

Density of daynightday
0.0
−0.5
0.0
0.5
1.0
1.5
N = 1806 Bandwidth = 0.04081

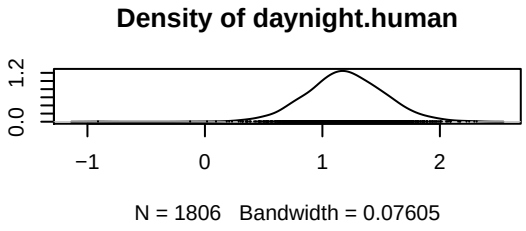

Trace of daynightnight
0.5
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

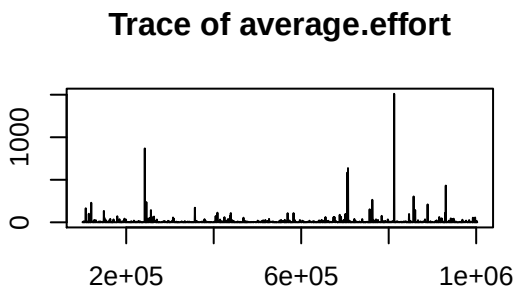

Density of daynightnight
0.0
2.5
0.5
1.0
1.5
2.0
2.5
N = 1806 Bandwidth = 0.03489

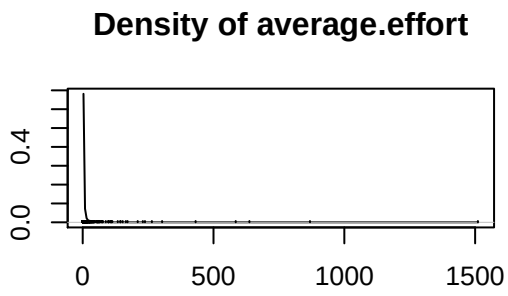

Trace of Location2Stewart Creek
−20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

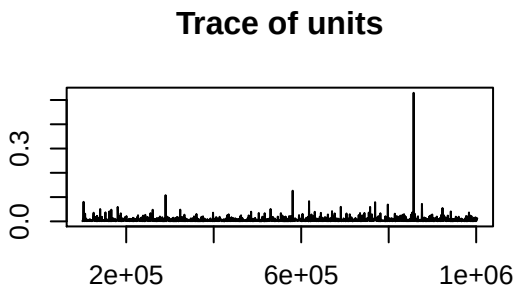

Density of Location2Stewart Creek
0.00
−20
0
20
40
60
N = 1806 Bandwidth = 0.3359

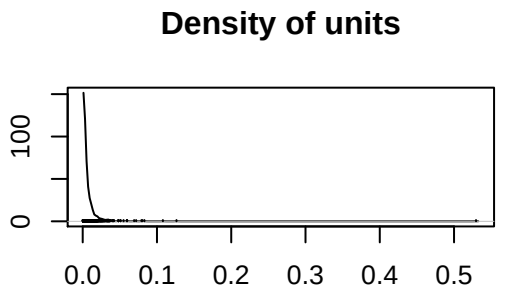

Trace of daynight.human
−1.0
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

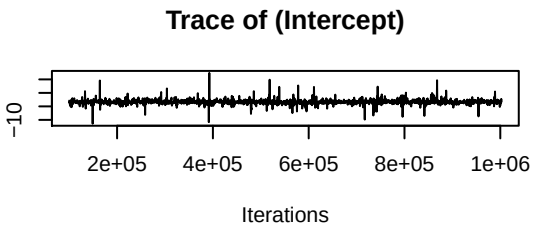

Density of daynight.human
0.0 1.2
−1
0
1
2
N = 1806 Bandwidth = 0.07605

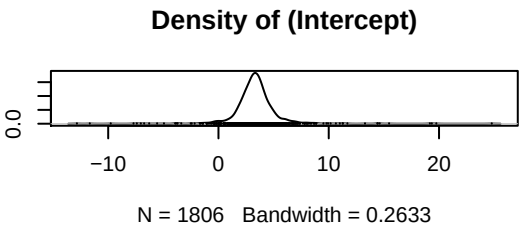

Trace of average.effort
0
1000
2e+05
6e+05
1e+06
Iterations

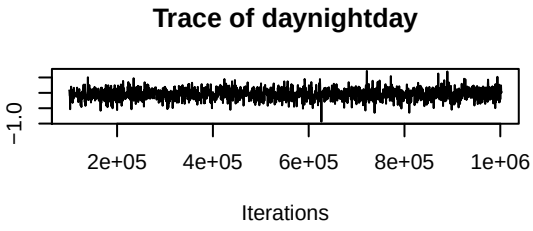

Density of average.effort
0.0
0.4
0
500
1000
1500
N = 1806 Bandwidth = 0.4835

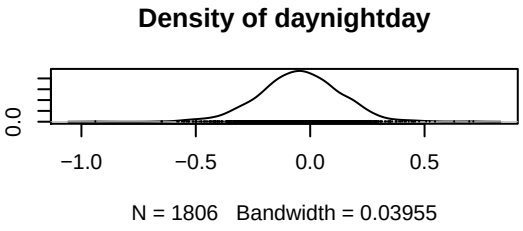

Trace of units
0.0
0.3
2e+05
6e+05
1e+06
Iterations

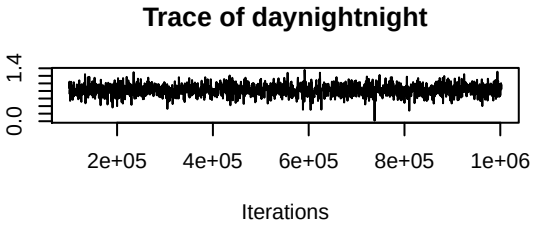

Density of units
0
100
0.0
0.1
0.2
0.3
0.4
0.5
N = 1806 Bandwidth = 0.001004

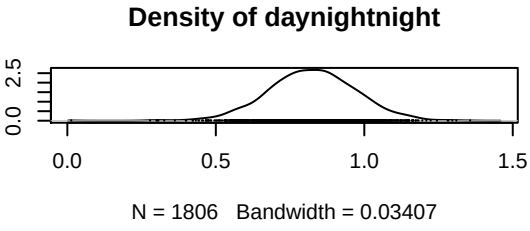

Trace of (Intercept)
−10
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

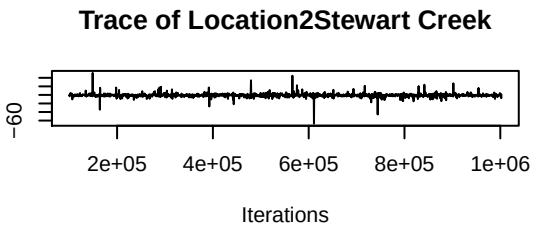

Density of (Intercept)
0.0
−10
0
10
20
N = 1806 Bandwidth = 0.2633

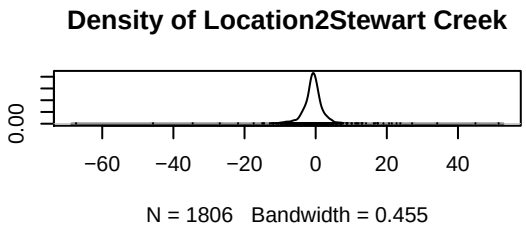

Trace of daynightday
−1.0
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

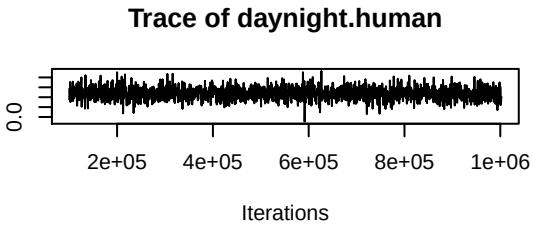

Density of daynightday
0.0
−1.0
−0.5
0.0
0.5
N = 1806 Bandwidth = 0.03955

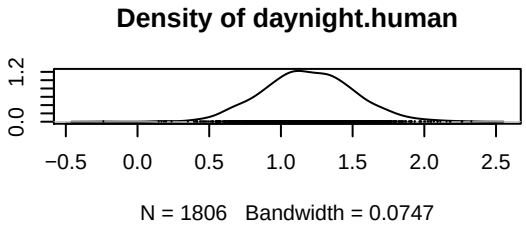

Trace of daynightnight
0.0 1.4
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

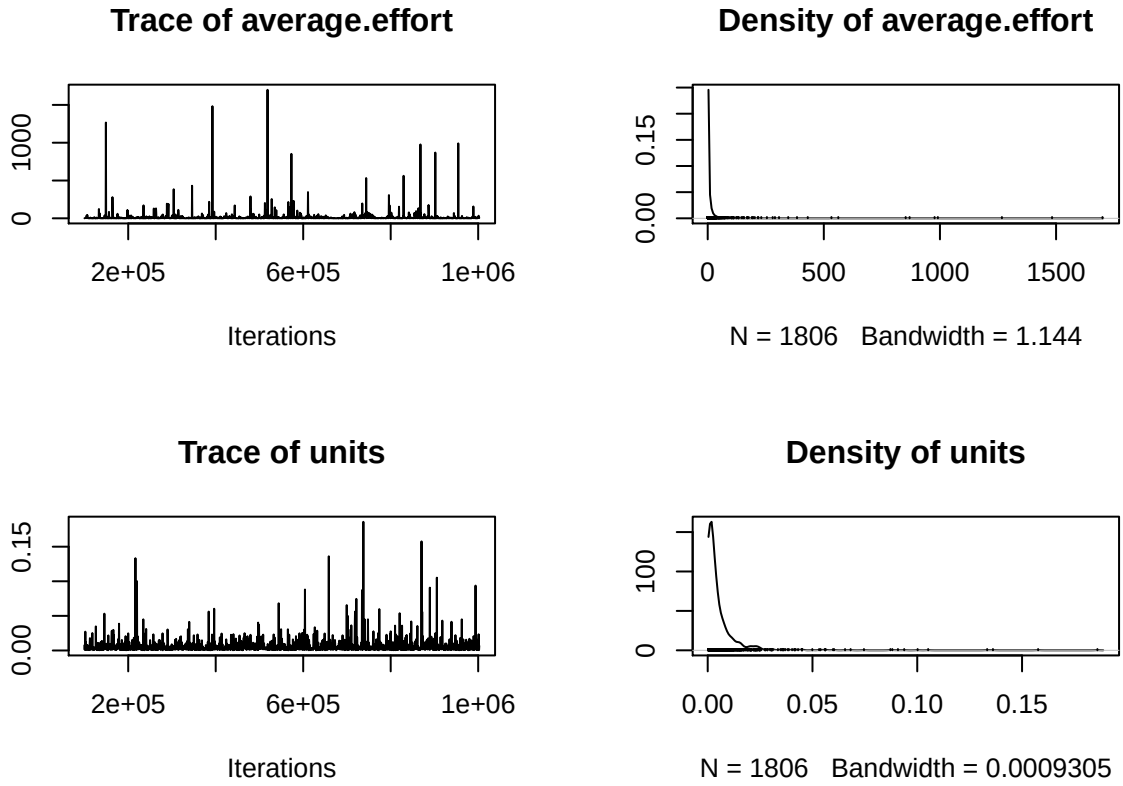

Density of daynightnight
0.0 2.5
0.0
0.5
1.0
1.5
N = 1806 Bandwidth = 0.03407


Trace of Location2Stewart Creek
−60
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations


Density of Location2Stewart Creek
0.00
−60
−40
−20
0
20
40
N = 1806 Bandwidth = 0.455


Trace of daynight.human
0.0
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations


Density of daynight.human
0.0
1.2
−0.5
0.0
0.5
1.0
1.5
2.0
2.5
N = 1806 Bandwidth = 0.0747

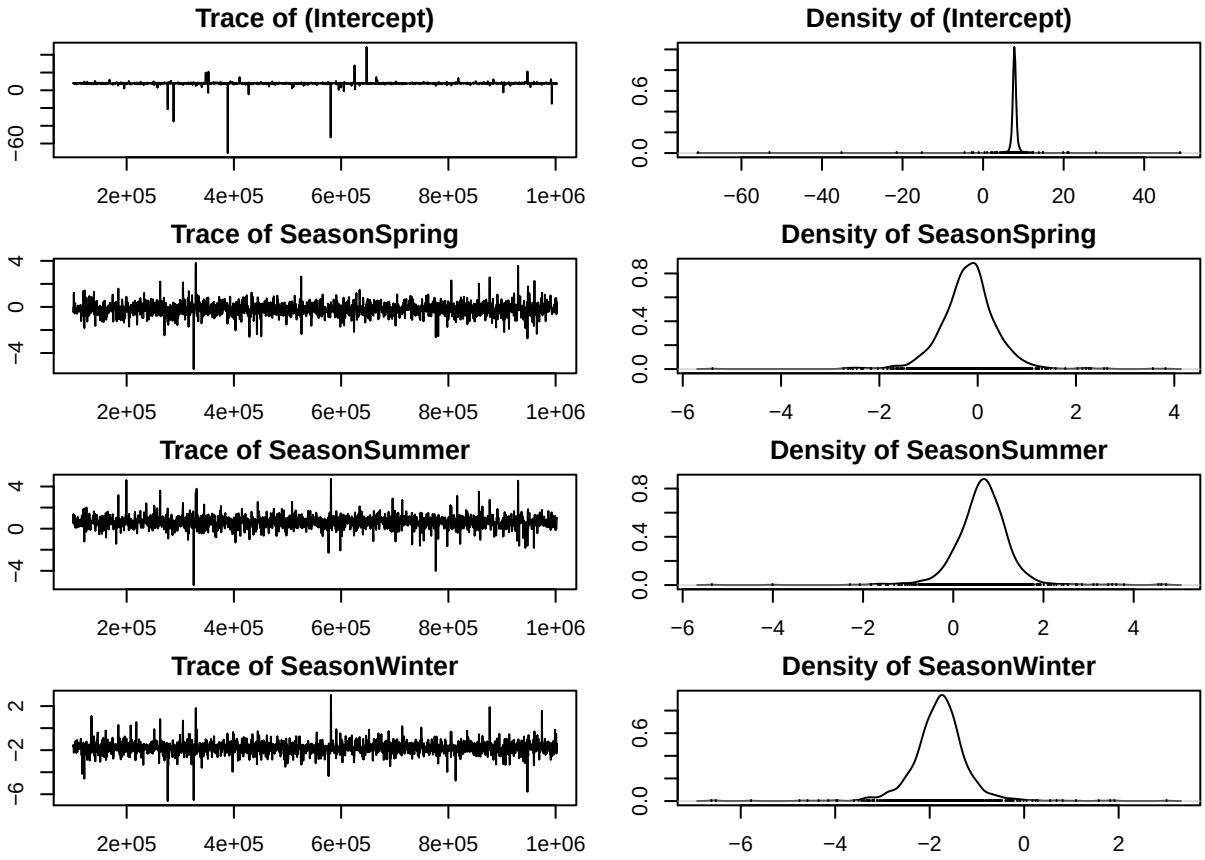


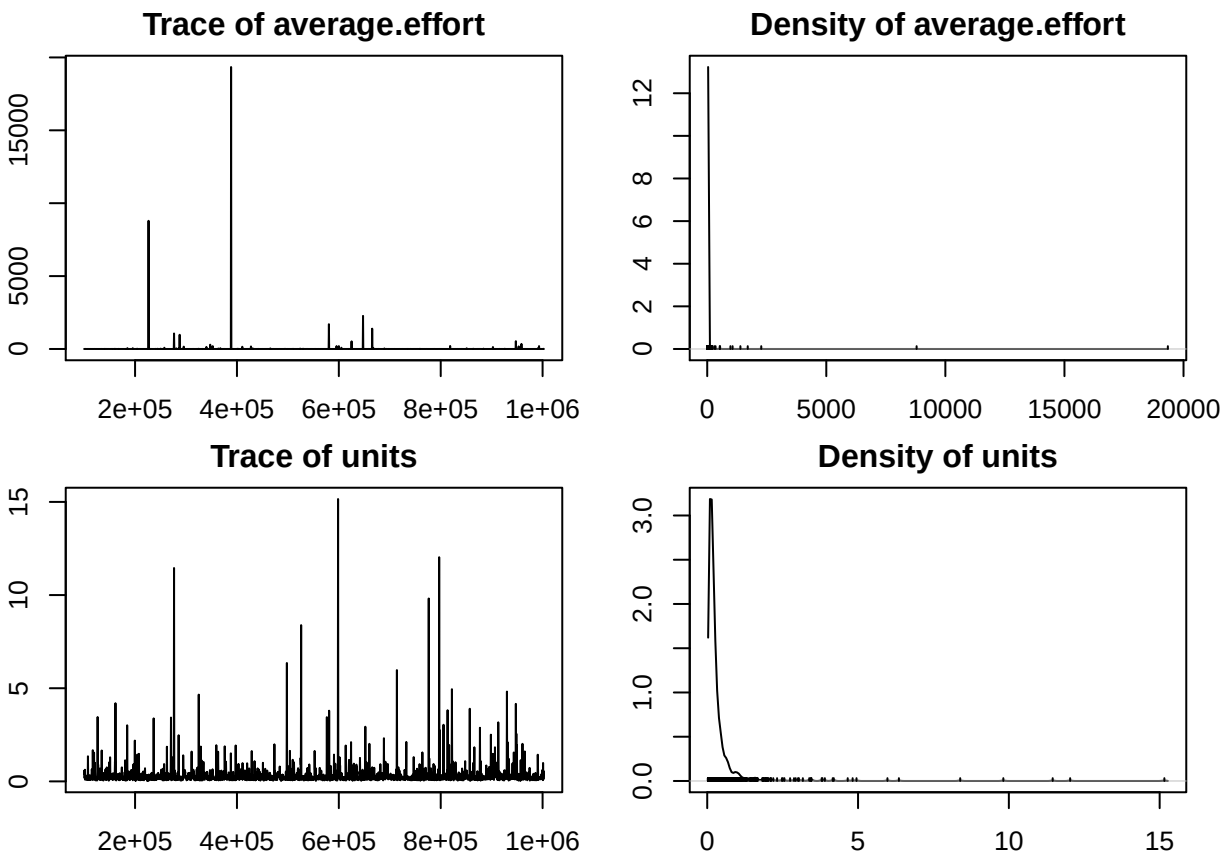
big seasonal carnivores ## Underpass

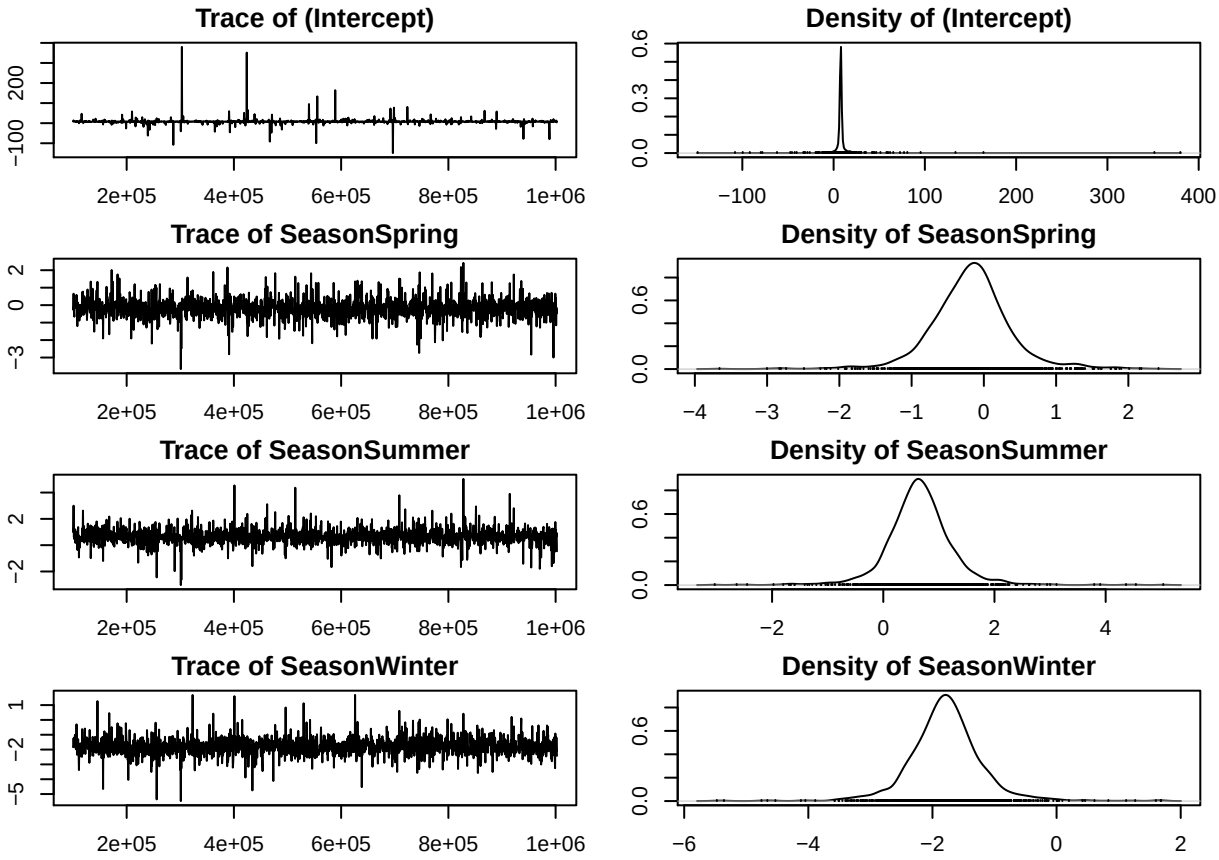
model summary and plots of IG prior and expanded prior respectively

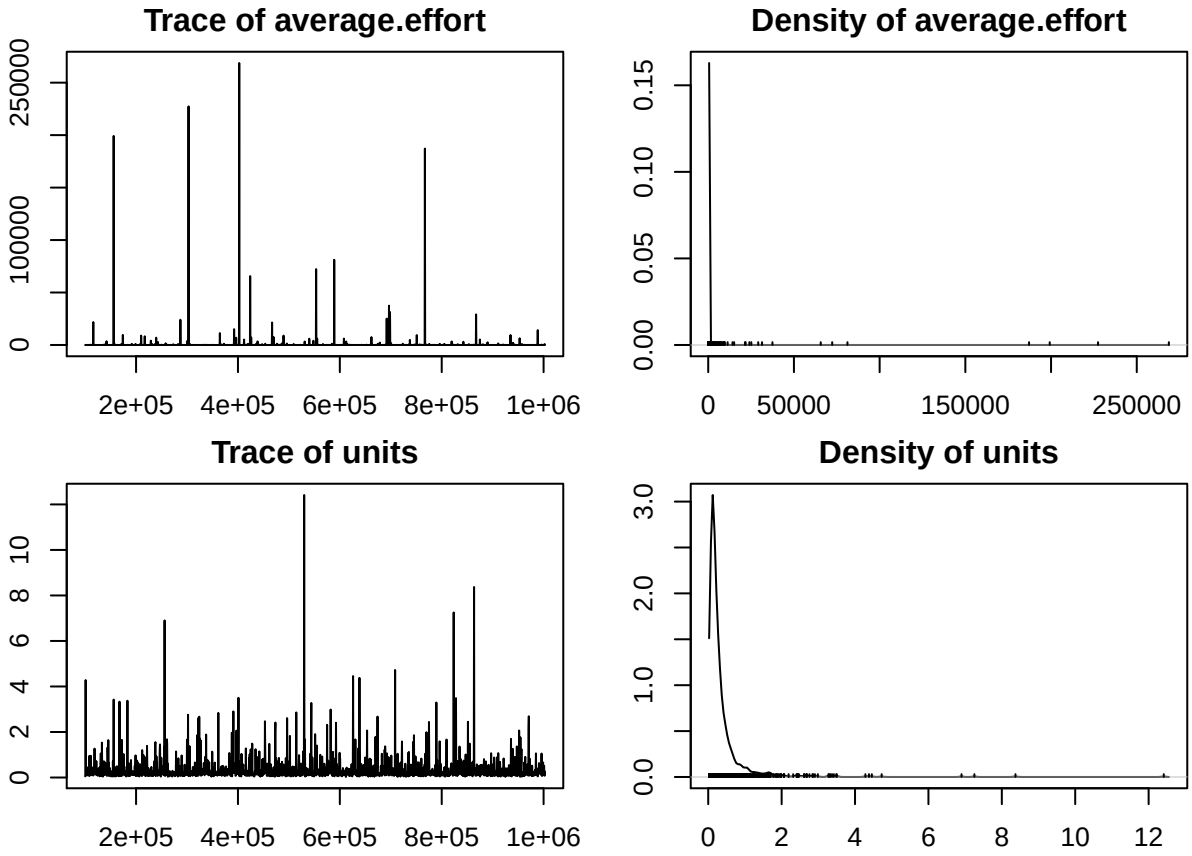
```
##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 90.43935
##
##  G-structure:  ~average.effort
##
##                post.mean  l-95% CI u-95% CI eff.samp
## average.effort     22.66 0.0002962    3.605     1806
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units    0.3529  0.03297    1.042     1710
##
##  Location effects: Total ~ Season
##
##              post.mean l-95% CI u-95% CI eff.samp   pMCMC
## (Intercept)     7.6821   6.5318   9.3090     1806 0.00997 **
## SeasonSpring   -0.1848  -1.2789   0.8946     1632 0.68328
```

```
## SeasonSummer    0.6434  -0.4548   1.7512     1806 0.19934
## SeasonWinter   -1.7838  -2.9537  -0.7176     1806 0.01329 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 90.3822
##
##  G-structure:  ~average.effort
##
##                post.mean l-95% CI u-95% CI eff.samp
## average.effort     877.8 7.48e-07    643.7     1806
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units    0.3664  0.02392    1.211     1806
##
##  Location effects: Total ~ Season
##
##              post.mean l-95% CI u-95% CI eff.samp  pMCMC
## (Intercept)     8.1178  -5.0109  20.7143     1806 0.0831 .
## SeasonSpring   -0.1792  -1.3095   1.0012     1806 0.6777
## SeasonSummer    0.6545  -0.5437   1.8361     1447 0.1672
## SeasonWinter   -1.7888  -2.9757  -0.5776     1806 0.0177 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```


Trace of (Intercept)
Density of (Intercept)
Trace of SeasonSpring
Density of SeasonSpring
Trace of SeasonSummer
Density of SeasonSummer
Trace of SeasonWinter
Density of SeasonWinter
2e+05
4e+05
6e+05
8e+05
1e+06


Trace of average.effort
0
5000
15000
2e+05
4e+05
6e+05
8e+05
1e+06
Density of average.effort
0
2
4
6
8
12
0
5000
10000
15000
20000
Trace of units
0
5
10
15
2e+05
4e+05
6e+05
8e+05
1e+06
Density of units
0.0
1.0
2.0
3.0
0
5
10
15


Trace of (Intercept)
Density of (Intercept)
Trace of SeasonSpring
Density of SeasonSpring
Trace of SeasonSummer
Density of SeasonSummer
Trace of SeasonWinter
Density of SeasonWinter
2e+05
4e+05
6e+05
8e+05
1e+06

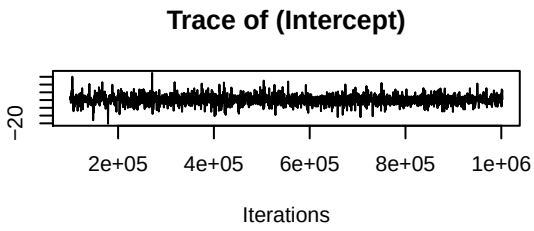


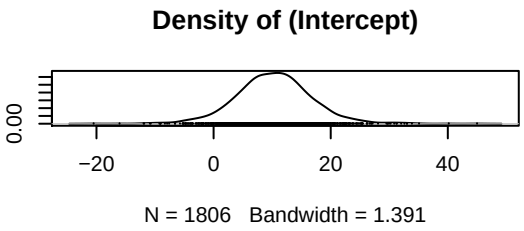
Jumpouts

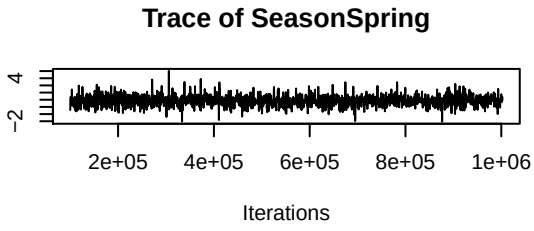
model summary and plots of IG prior and expanded prior respectively

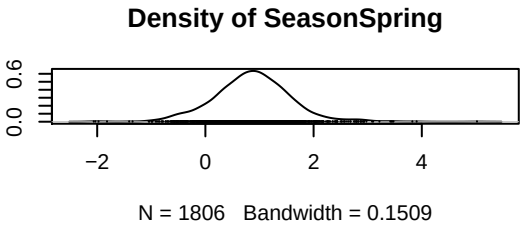
```
##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 138.1503
##
##  G-structure:  ~average.effort
##
##                post.mean  l-95% CI u-95% CI eff.samp
## average.effort     7.516 0.0005174     22.6     1806
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units     1.006   0.1628    2.499     1930
##
##  Location effects: Total ~ Season + Location2 + seasonal.human
##
##                         post.mean l-95% CI u-95% CI eff.samp  pMCMC
## (Intercept)               10.2946  -2.6375  23.1970     1806 0.1019
## SeasonSpring               0.8670  -0.6127   2.1778     1806 0.2016
```

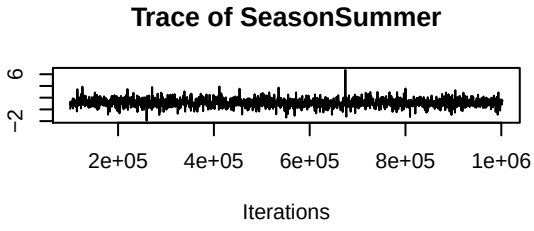
```
## SeasonSummer              1.1524  -0.1843   2.5982     1806 0.0919 .
## SeasonWinter             -0.3372  -1.9943   1.2576     2086 0.6368
## Location2Stewart Creek    0.8584  -4.8800   6.5988     1662 0.6379
## seasonal.human           -3.5089 -11.5446   3.8726     1806 0.3178
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 138.1708
##
##  G-structure:  ~average.effort
##
##                post.mean  l-95% CI u-95% CI eff.samp
## average.effort     33.14 0.0001863    73.05     1806
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units     0.892   0.1688    2.066     1806
##
##  Location effects: Total ~ Season + Location2 + seasonal.human
##
##                         post.mean l-95% CI u-95% CI eff.samp  pMCMC
## (Intercept)              10.2298  -2.1421  24.2865     1806 0.1096
## SeasonSpring              0.8679  -0.5661   2.2043     1806 0.2004
## SeasonSummer              1.1569  -0.2178   2.6211     1806 0.0975 .
## SeasonWinter             -0.3541  -2.0009   1.2649     1832 0.6656
## Location2Stewart Creek    0.8979 -10.1511   9.7642     2189 0.7331
## seasonal.human           -3.4885 -10.8635   4.1626     1806 0.2979
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

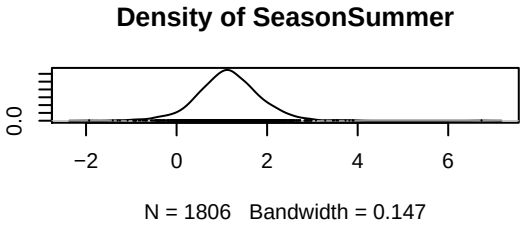

Trace of (Intercept)
−20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

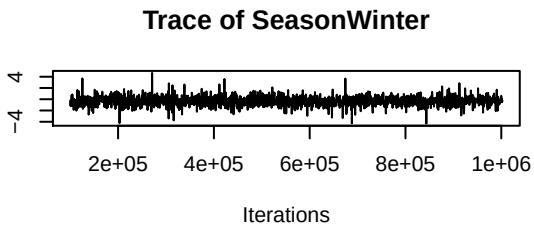

Density of (Intercept)
0.00
−20
0
20
40
N = 1806 Bandwidth = 1.391

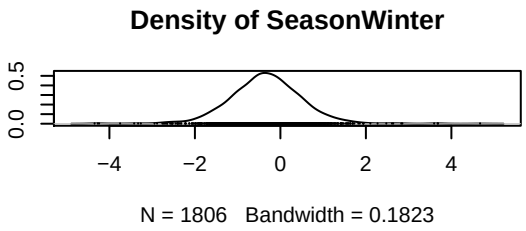

Trace of SeasonSpring
−2 4
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

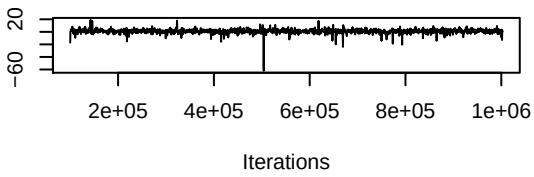

Density of SeasonSpring
0.0 0.6
−2
0
2
4
N = 1806 Bandwidth = 0.1509

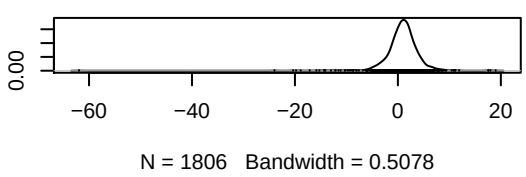

Trace of SeasonSummer
−2 6
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

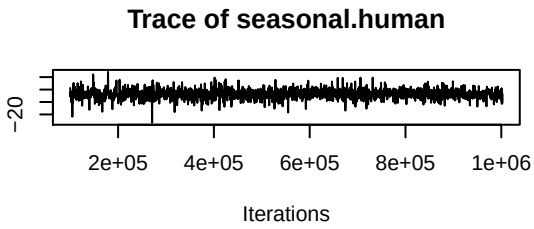

Density of SeasonSummer
0.0
−2
0
2
4
6
N = 1806 Bandwidth = 0.147

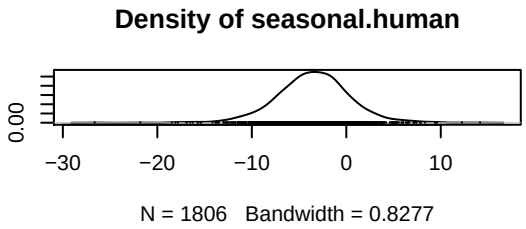

Trace of SeasonWinter
−4
4
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

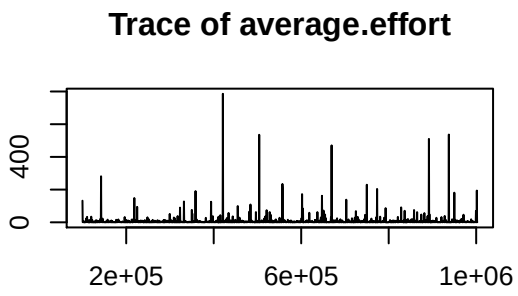

Density of SeasonWinter
0.0
0.5
−4
−2
0
2
4
N = 1806 Bandwidth = 0.1823

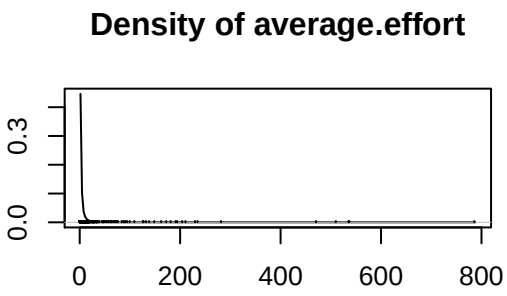

Trace of Location2Stewart Creek
−60
20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

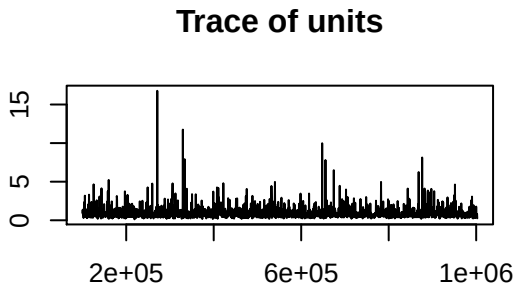

Density of Location2Stewart Creek
0.00
−60
−40
−20
0
20
N = 1806 Bandwidth = 0.5078

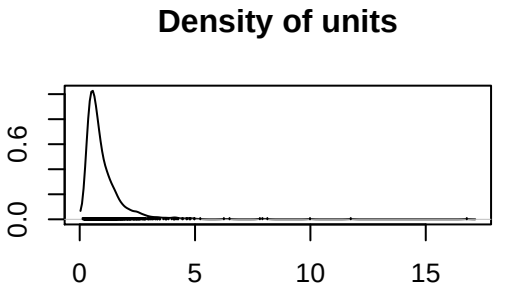

Trace of seasonal.human
−20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

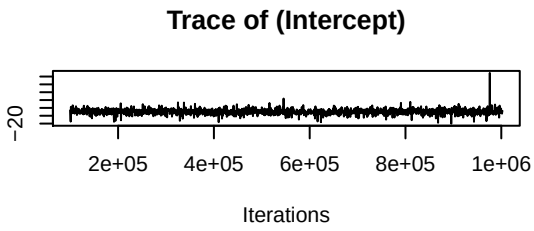

Density of seasonal.human
0.00
−30
−20
−10
0
10
N = 1806 Bandwidth = 0.8277

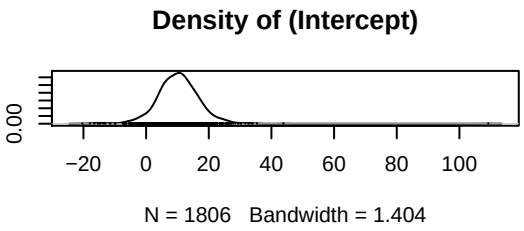

Trace of average.effort
0
400
2e+05
6e+05
1e+06
Iterations

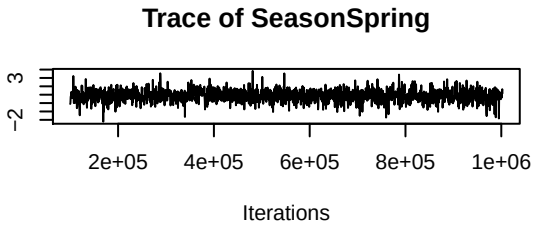

Density of average.effort
0.0
0.3
0
200
400
600
800
N = 1806 Bandwidth = 0.6032

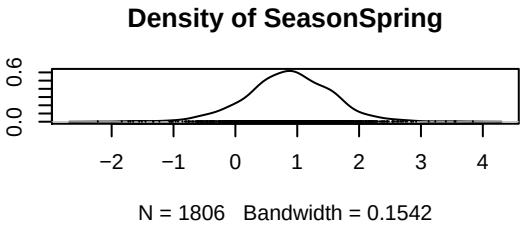

Trace of units
0
5
15
2e+05
6e+05
1e+06
Iterations

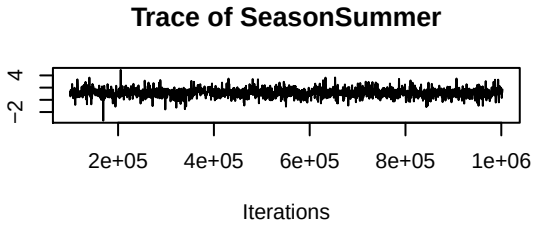

Density of units
0.0
0.6
0
5
10
15
N = 1806 Bandwidth = 0.123

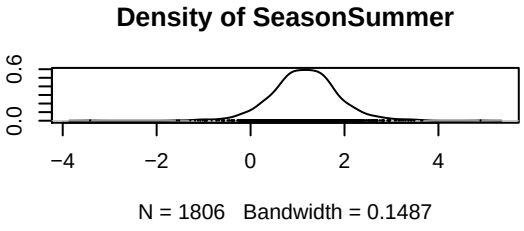

Trace of (Intercept)
−20
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

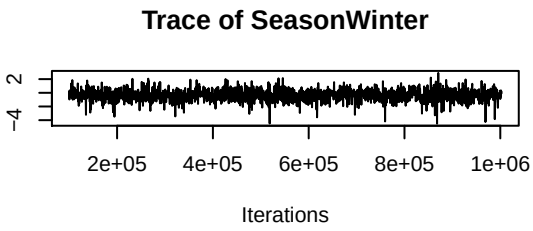

Density of (Intercept)
0.00
−20
0
20
40
60
80
100
N = 1806 Bandwidth = 1.404

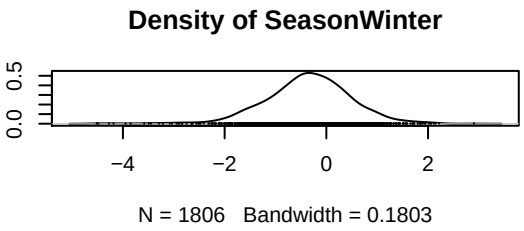

Trace of SeasonSpring
−2
3
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

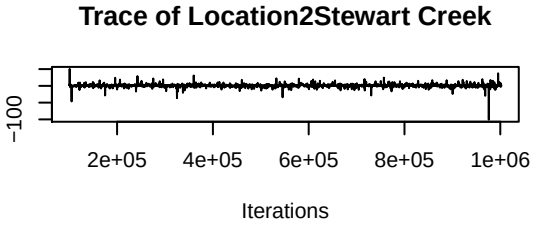

Density of SeasonSpring
0.0
0.6
−2
−1
0
1
2
3
4
N = 1806 Bandwidth = 0.1542

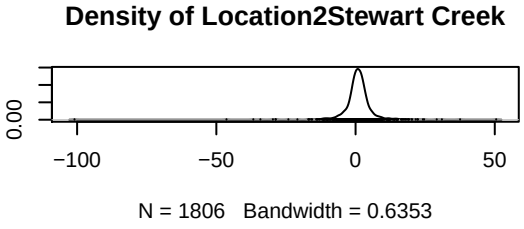

Trace of SeasonSummer
−2
4
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

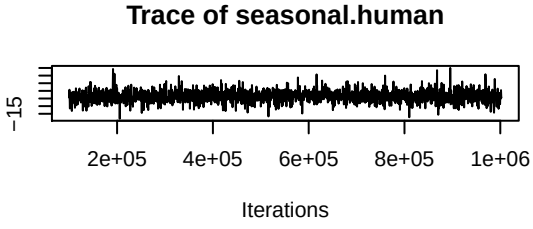

Density of SeasonSummer
0.0
0.6
−4
−2
0
2
4
N = 1806 Bandwidth = 0.1487

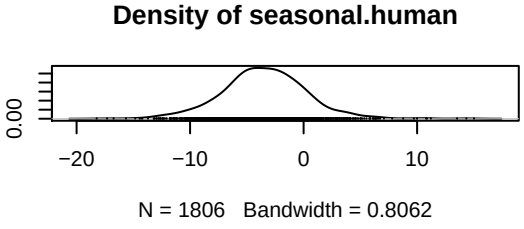

Trace of SeasonWinter
−4
2
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations

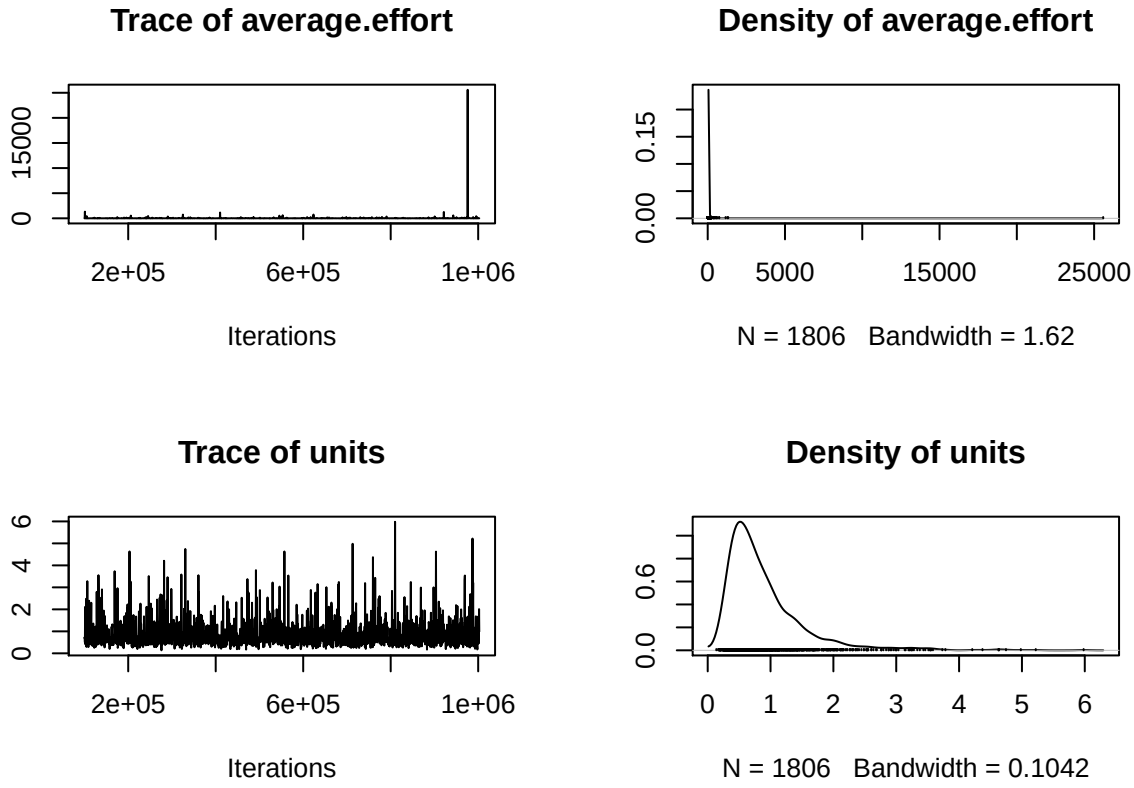

Density of SeasonWinter
0.0
0.5
−4
−2
0
2
N = 1806 Bandwidth = 0.1803


Trace of Location2Stewart Creek
−100
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations


Density of Location2Stewart Creek
0.00
−100
−50
0
50
N = 1806 Bandwidth = 0.6353


Trace of seasonal.human
−15
2e+05
4e+05
6e+05
8e+05
1e+06
Iterations


Density of seasonal.human
0.00
−20
−10
0
10
N = 1806 Bandwidth = 0.8062

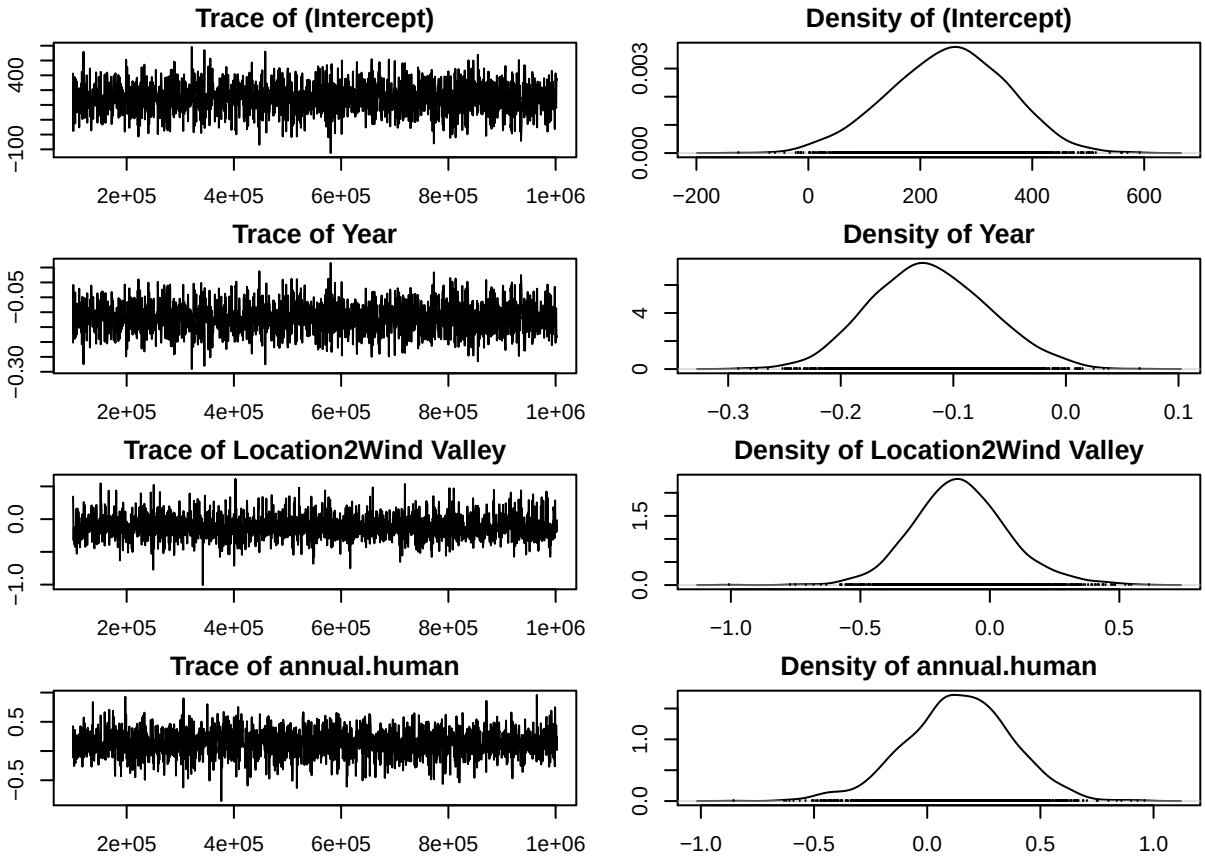


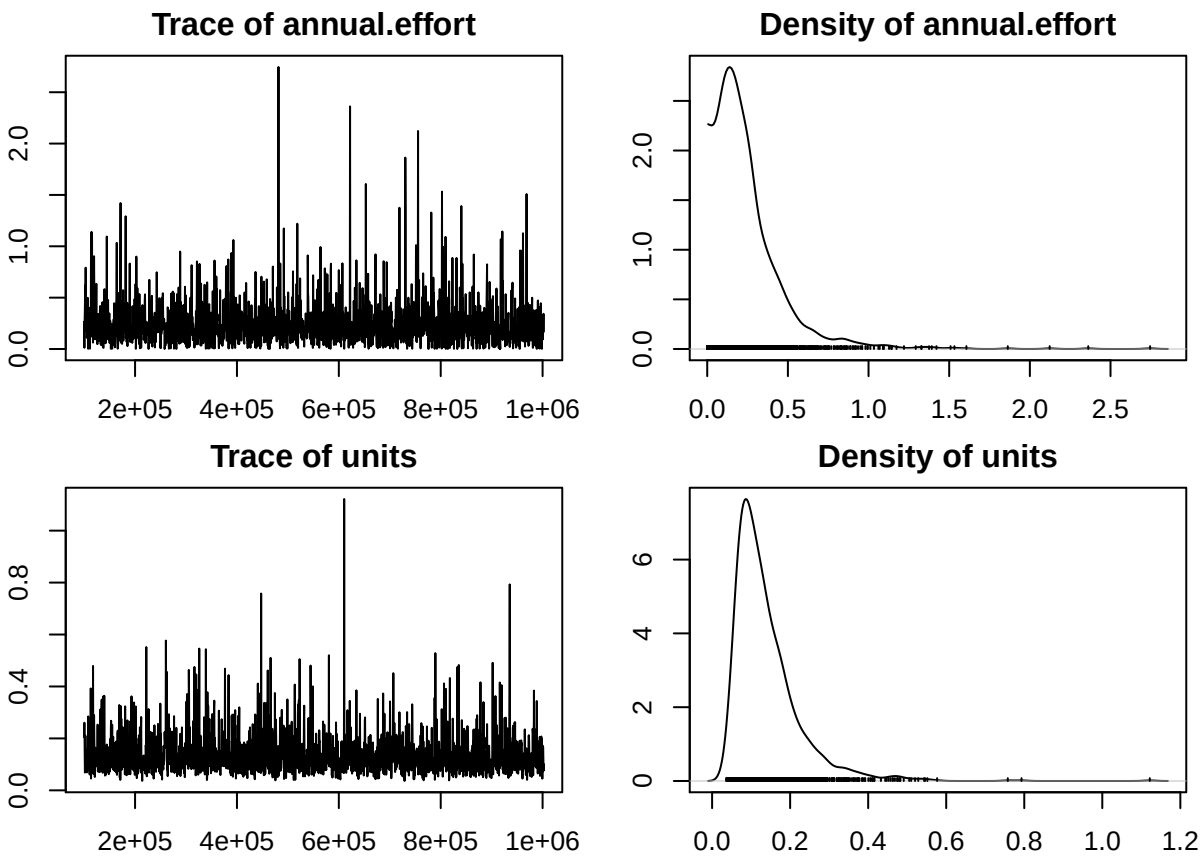
big annual carnivores ## Underpass

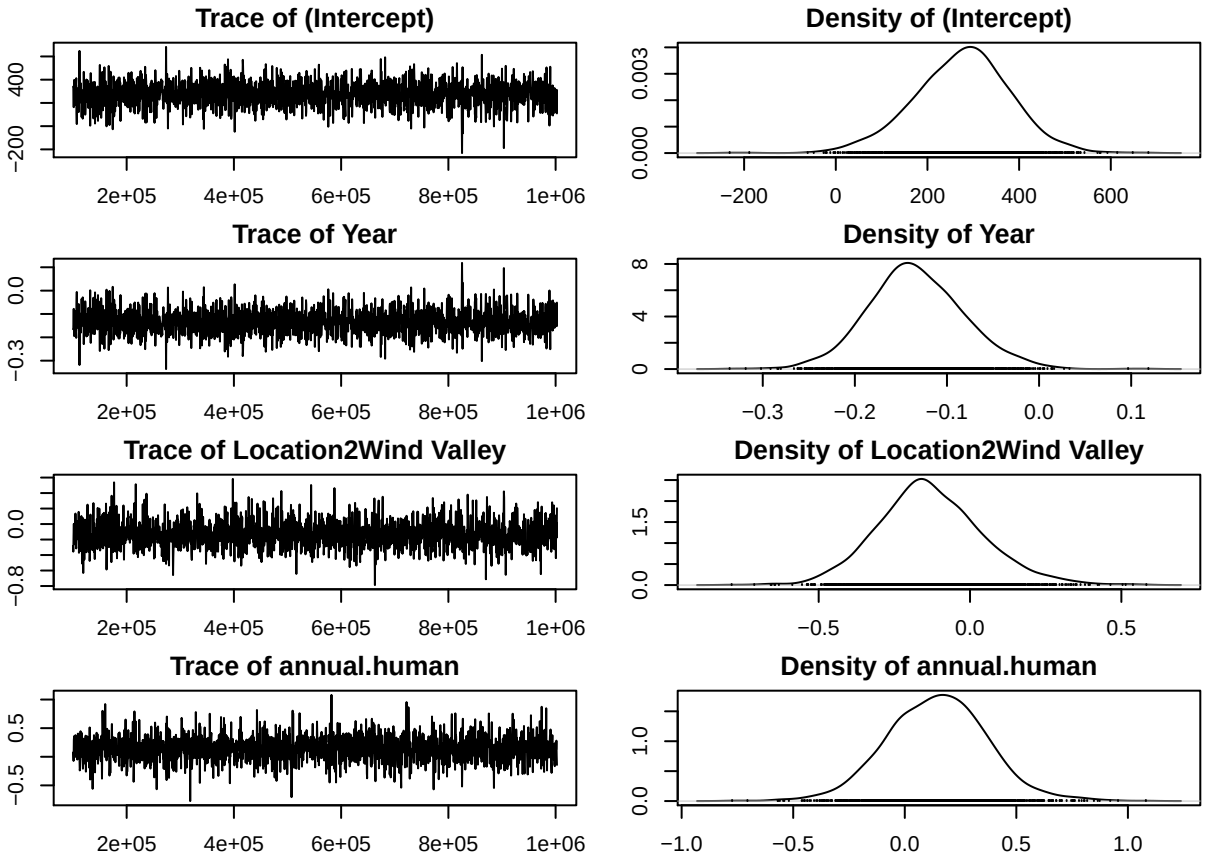
model summary and plots of IG prior and expanded prior respectively

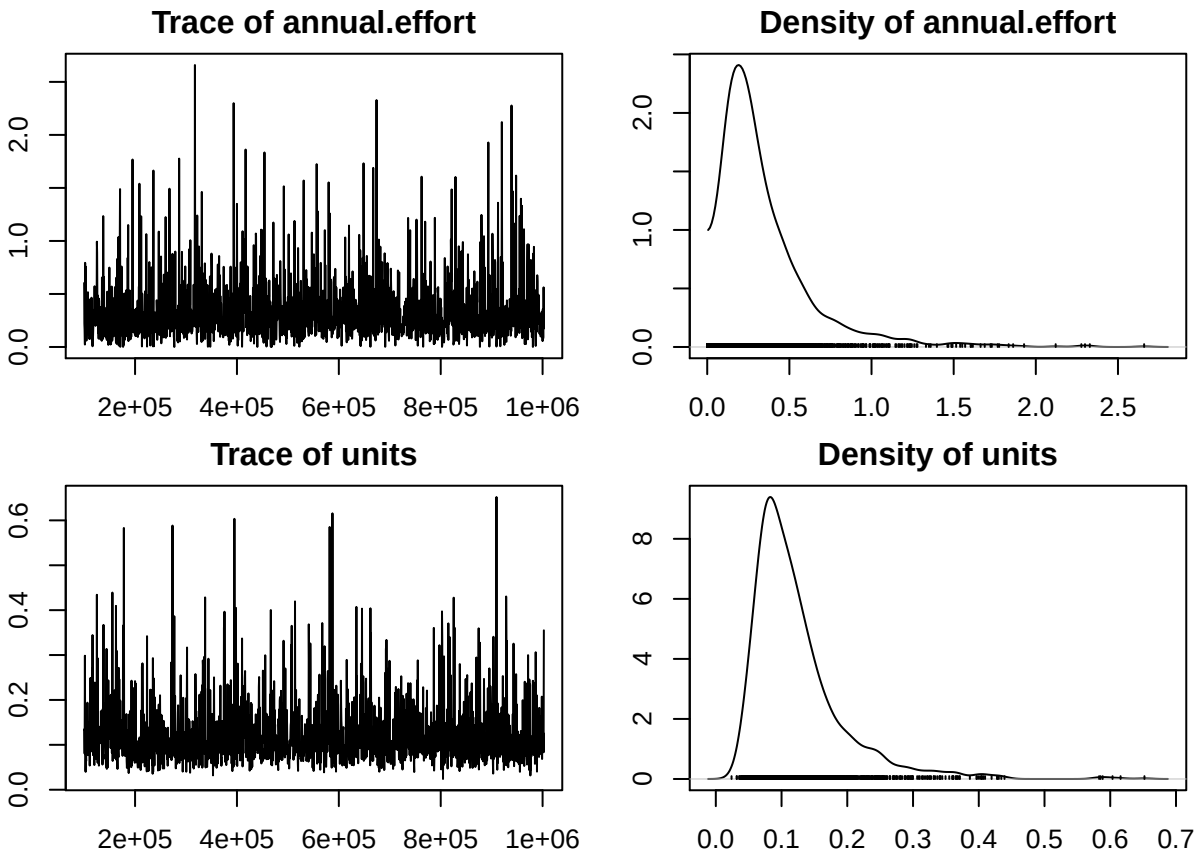
```
##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 241.5903
##
##  G-structure:  ~annual.effort
##
##               post.mean  l-95% CI u-95% CI eff.samp
## annual.effort    0.2462 0.0003093   0.6443     1643
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units    0.1395  0.03843   0.2951     1806
##
##  Location effects: Total ~ Year + Location2 + annual.human
##
##                      post.mean  l-95% CI  u-95% CI eff.samp  pMCMC
## (Intercept)          249.93749  45.60257 447.06910     1806 0.0133 *
## Year                  -0.12100  -0.21936  -0.01948     1806 0.0188 *
```

```
## Location2Wind Valley  -0.11244  -0.45425   0.28674     1806 0.5039
## annual.human           0.13780  -0.28289   0.63444     1806 0.5138
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 241.4843
##
##  G-structure:  ~annual.effort
##
##               post.mean  l-95% CI u-95% CI eff.samp
## annual.effort    0.3433 2.082e-05   0.9206     1912
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units     0.124  0.03593   0.2606     1806
##
##  Location effects: Total ~ Year + Location2 + annual.human
##
##                      post.mean  l-95% CI  u-95% CI eff.samp  pMCMC
## (Intercept)          275.63846  50.97846 468.75244     1806 0.0133 *
## Year                  -0.13377  -0.22944  -0.02198     1806 0.0155 *
## Location2Wind Valley  -0.13199  -0.47909   0.20522     1806 0.4086
## annual.human           0.14410  -0.30100   0.58341     1806 0.5205
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```


Trace of (Intercept)
Density of (Intercept)
Trace of Year
Density of Year
Trace of Location2Wind Valley
Density of Location2Wind Valley
Trace of annual.human
Density of annual.human
2e+05
4e+05
6e+05
8e+05
1e+06


Trace of annual.effort
Density of annual.effort
Trace of units
Density of units
0.0
1.0
2.0
0.4
0.8
2
4
6
2e+05
4e+05
6e+05
8e+05
1e+06
0.5
1.5
2.5
0.2
0.6
1.2


Trace of (Intercept)
Density of (Intercept)
Trace of Year
Density of Year
Trace of Location2Wind Valley
Density of Location2Wind Valley
Trace of annual.human
Density of annual.human

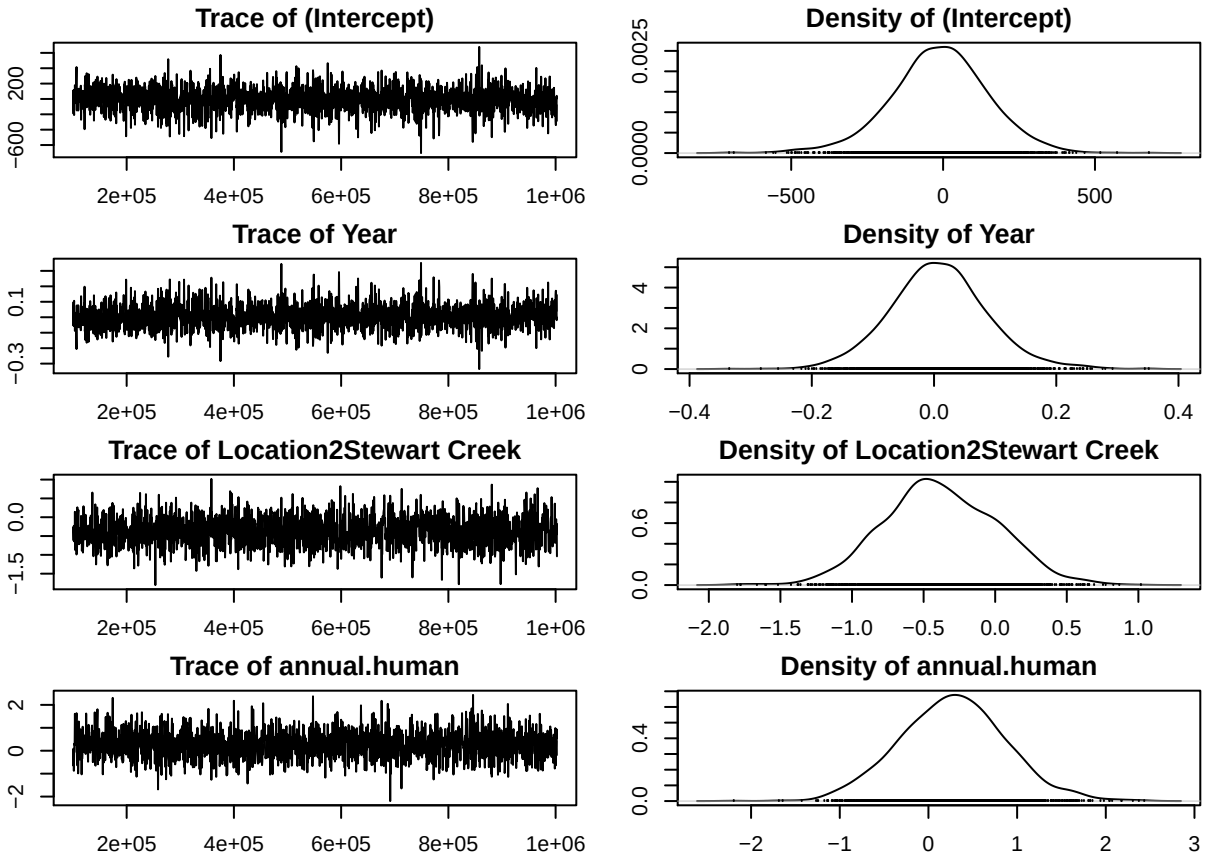


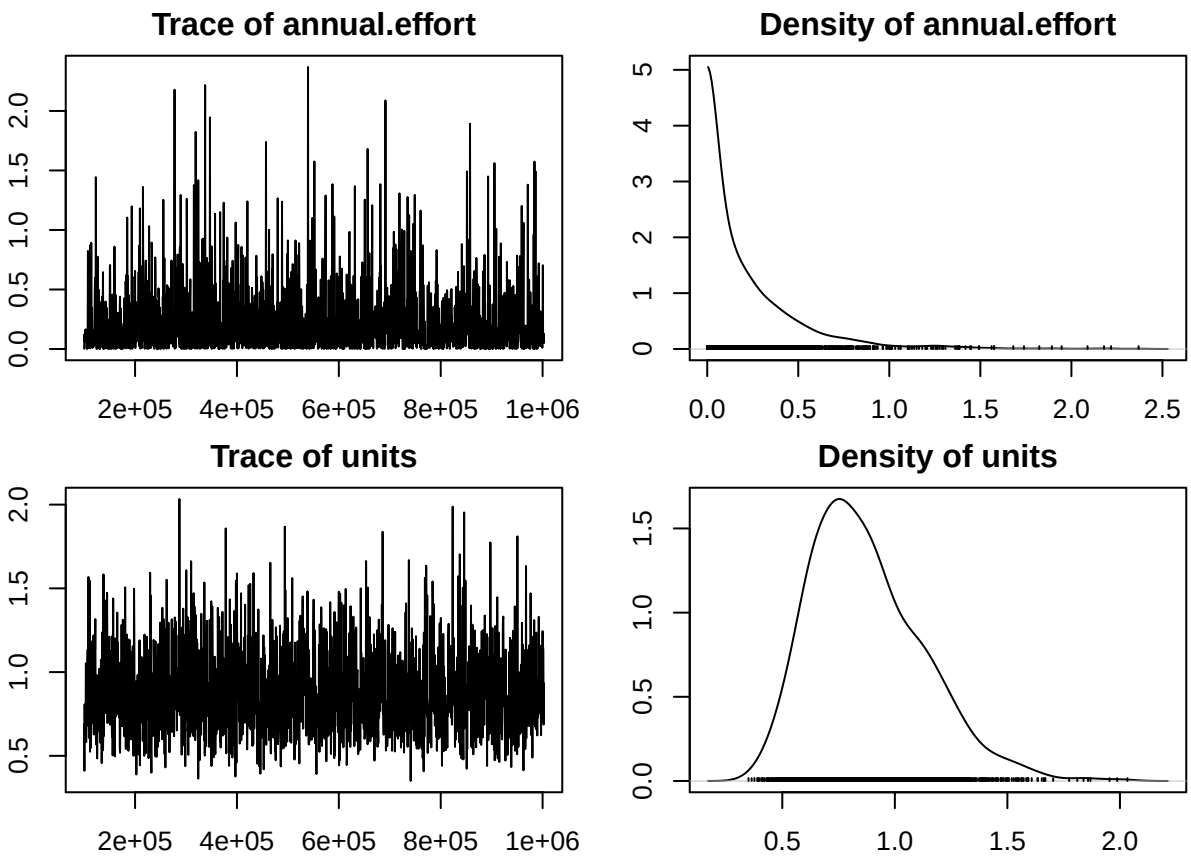
Jumpouts

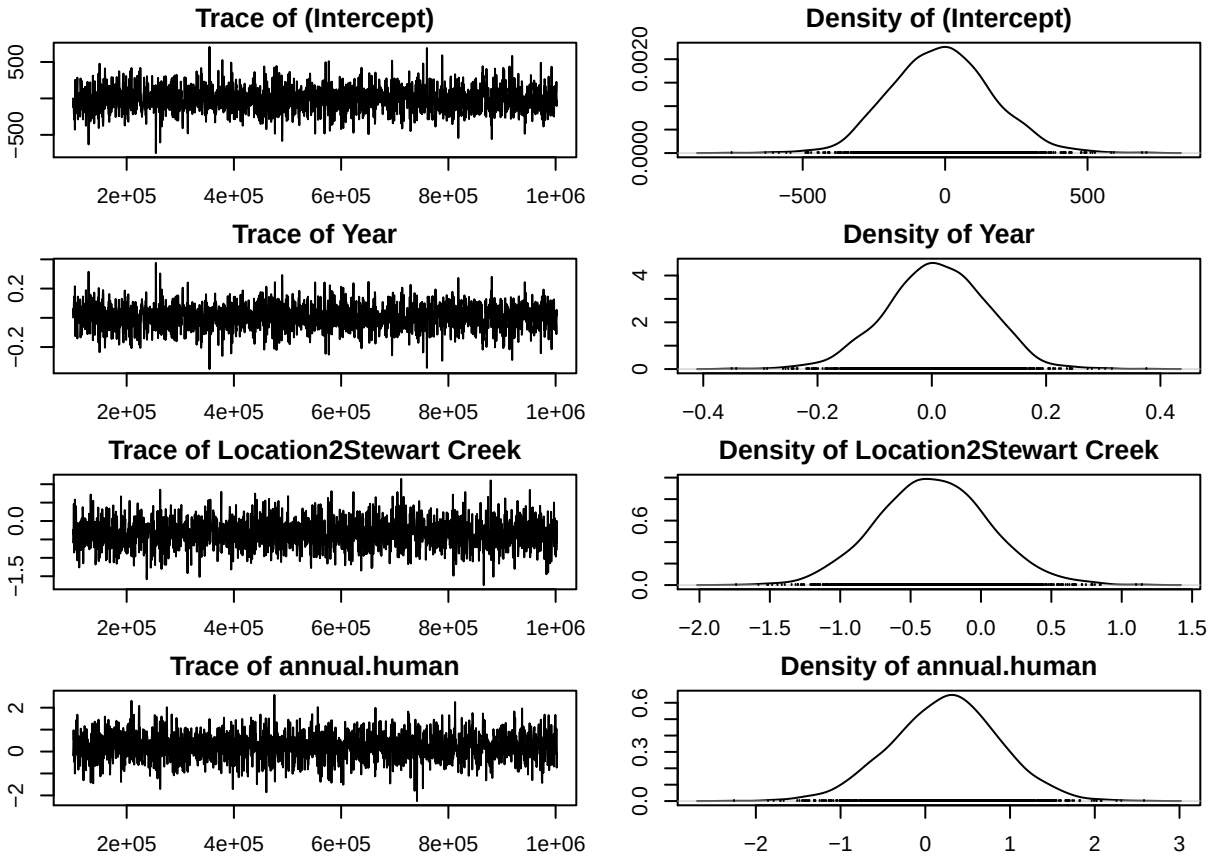
model summary and plots of IG prior and expanded prior respectively

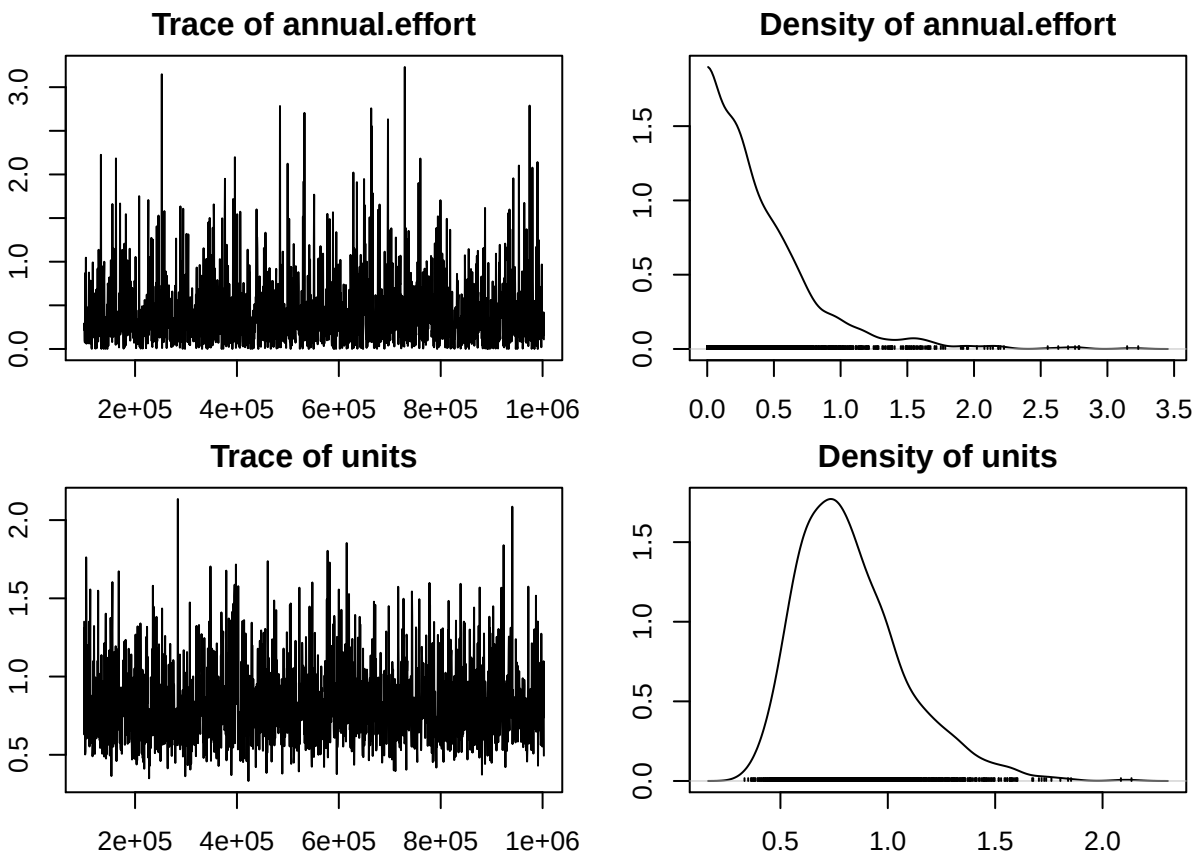
```
##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 326.3452
##
##  G-structure:  ~annual.effort
##
##                post.mean  l-95% CI u-95% CI eff.samp
## annual.effort    0.2364 0.0001907   0.7971     1971
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units    0.8766   0.4332     1.36     1806
##
##  Location effects: Total ~ Year + Location2 + annual.human
##
##                           post.mean   l-95% CI   u-95% CI eff.samp pMCMC
## (Intercept)             -1.183e+01 -3.260e+02  3.190e+02     2227 0.959
## Year                     7.686e-03 -1.572e-01  1.644e-01     2229 0.941
```

```
## Location2Stewart Creek -3.826e-01 -1.169e+00  3.196e-01     1806 0.353
## annual.human            2.754e-01 -1.033e+00  1.315e+00     1806 0.639

##
##  Iterations = 100001:1002501
##  Thinning interval  = 500
##  Sample size  = 1806
##
##  DIC: 326.2435
##
##  G-structure:  ~annual.effort
##
##               post.mean  l-95% CI u-95% CI eff.samp
## annual.effort     0.418 7.444e-08    1.194     1947
##
##  R-structure:  ~units
##
##       post.mean l-95% CI u-95% CI eff.samp
## units     0.829    0.434    1.358     1806
##
##  Location effects: Total ~ Year + Location2 + annual.human
##
##                          post.mean   l-95% CI   u-95% CI eff.samp pMCMC
## (Intercept)            -1.218e+01 -3.502e+02  3.162e+02     1681 0.940
## Year                    7.904e-03 -1.555e-01  1.761e-01     1681 0.919
## Location2Stewart Creek -3.416e-01 -1.097e+00  4.365e-01     1806 0.375
## annual.human            2.365e-01 -1.002e+00  1.457e+00     1971 0.692
```


Trace of (Intercept)
Density of (Intercept)
Trace of Year
Density of Year
Trace of Location2Stewart Creek
Density of Location2Stewart Creek
Trace of annual.human
Density of annual.human


Trace of annual.effort
Density of annual.effort
Trace of units
Density of units
0.0
0.5
1.0
1.5
2.0
0
1
2
3
4
5
2e+05
4e+05
6e+05
8e+05
1e+06
0.0
0.5
1.0
1.5
2.0
2.5


Trace of (Intercept)
Density of (Intercept)
Trace of Year
Density of Year
Trace of Location2Stewart Creek
Density of Location2Stewart Creek
Trace of annual.human
Density of annual.human


Trace of annual.effort
Density of annual.effort
Trace of units
Density of units
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2e+05
4e+05
6e+05
8e+05
1e+06