Bayesian Age-Period-Cohort Prediction

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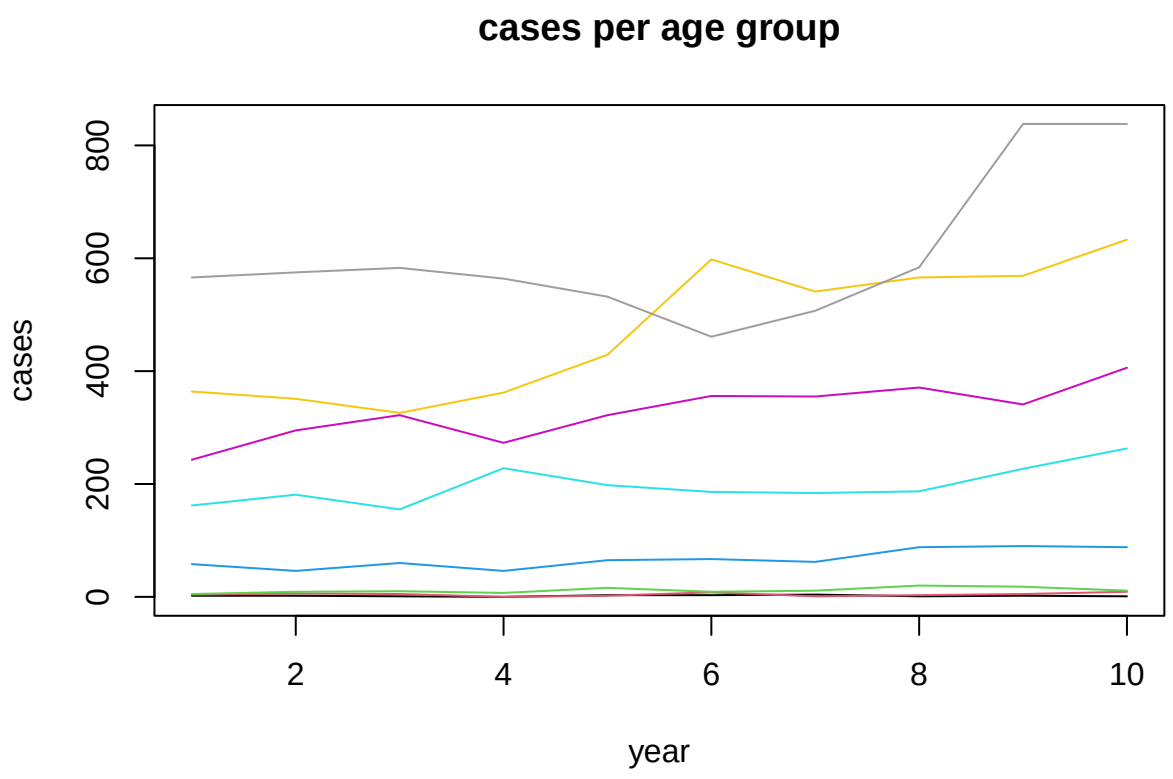
Prediction

Using the prior assumption of a random walk for the period and cohort effect, one can predict cases for upcoming years.

Here, we use the included data example.

```
data(apc)
plot(cases[,1],type="l",ylim=range(cases), ylab="cases", xlab="year", main="cases per age group")
for (i in 2:8)lines(cases[,i], col=i)
```



We us only nine years and predict the last year.

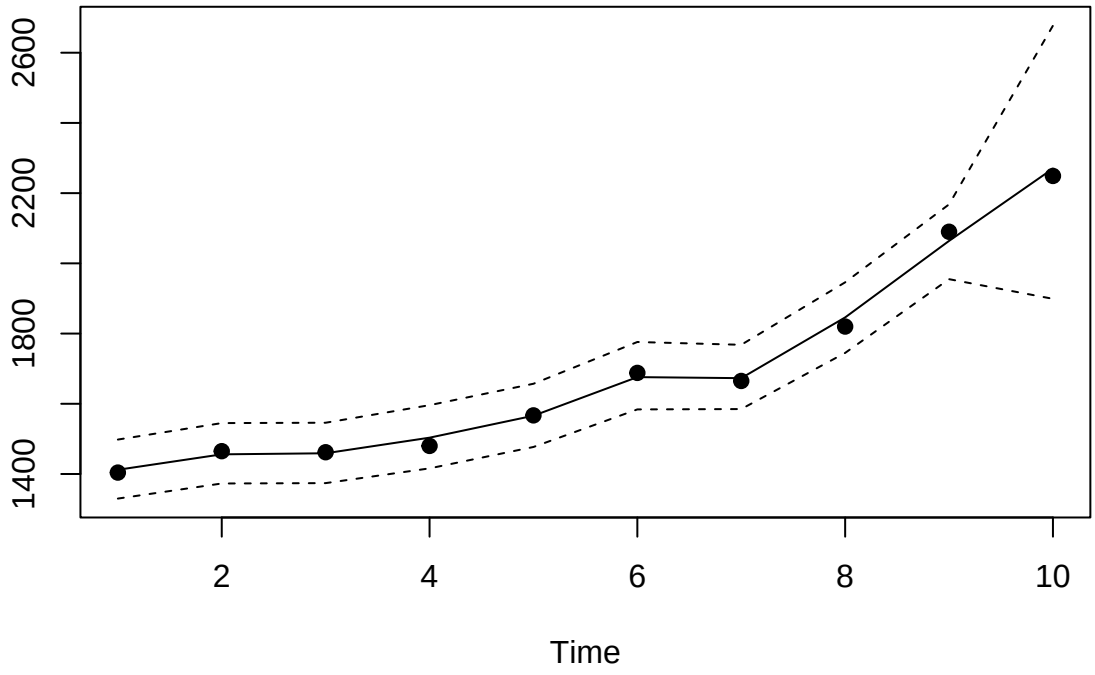
```
model0 <- bamp(cases[-10,], population[-10,], age="rw1", period="rw1", cohort="rw1",
               periods_per_agegroup = 5)
```

```
##
```

```
## Automatic check procedure removed 1 Markov chain. Please check for convergence using checkConvergenc
model0<-predict_apc(object=model0, periods=1, population=population, update = TRUE)
```

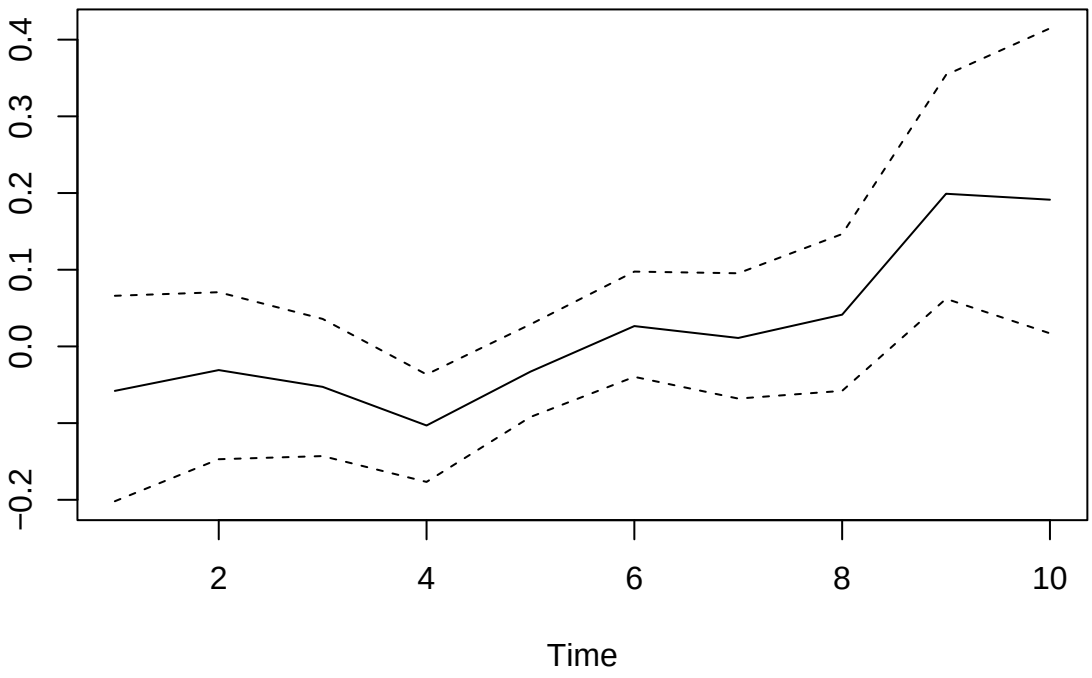
Plot of predicted cases with credible intervals and true data

```
ts.plot(t(model0$predicted$cases_period), lty=c(2,1,2))
points(apply(cases,1,sum), pch=19)
```

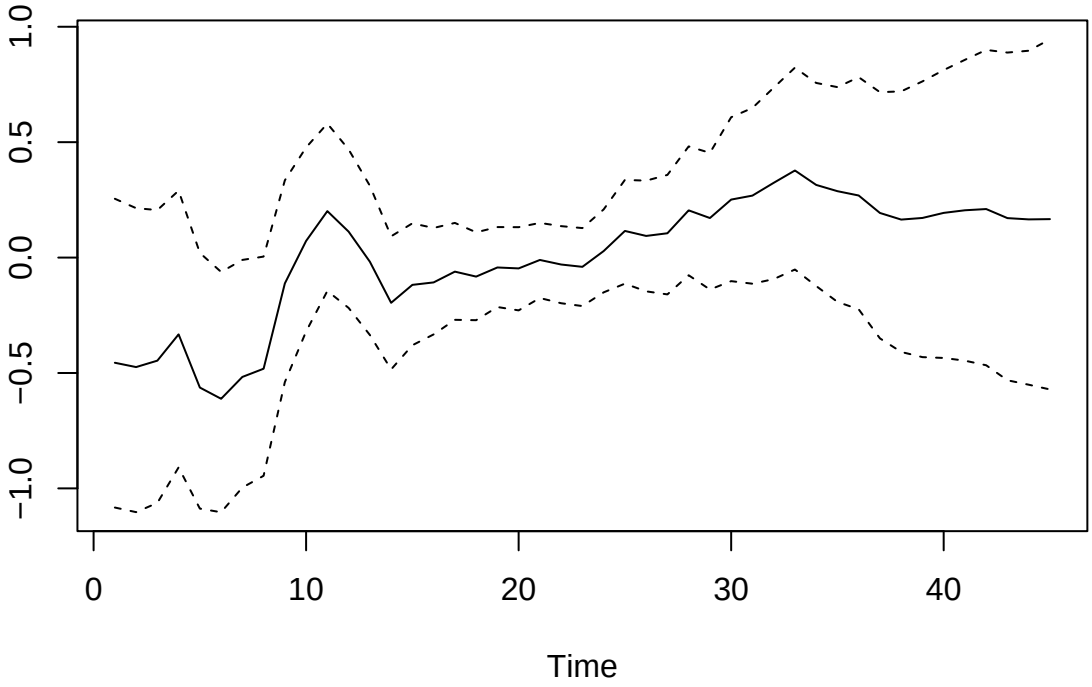


Plot period and cohort effects including prediction of year 10.

```
ts.plot(t(model0$predicted$period), lty=c(2,1,2))
```




```
ts.plot(t(model0$predicted$cohort), lty=c(2,1,2))
```


1.0
0.5
0.0
−0.5
−1.0
0
10
20
30
40
Time