

# ALFAM2 model sensitivity to $r_5$

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```
rm(list = ls())
library(data.table)
library(ALFAM2)
```

## Overview

How sensitive are predictions really to the  $r_5$  value?

## Parameters

```
parsm <- parsl <- parsh <- alfam2pars03[grepl('^int', names(alfam2pars03))]
parsl['int.r5'] <- -2.1
parsh['int.r5'] <- -1.5
```

```
dat <- data.table(ct = 1:168, TAN.app = 100)
predm <- alfam2(dat, pars = parsm)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predl <- alfam2(dat, pars = parsl)
```

```
## User-supplied parameters are being used.
```

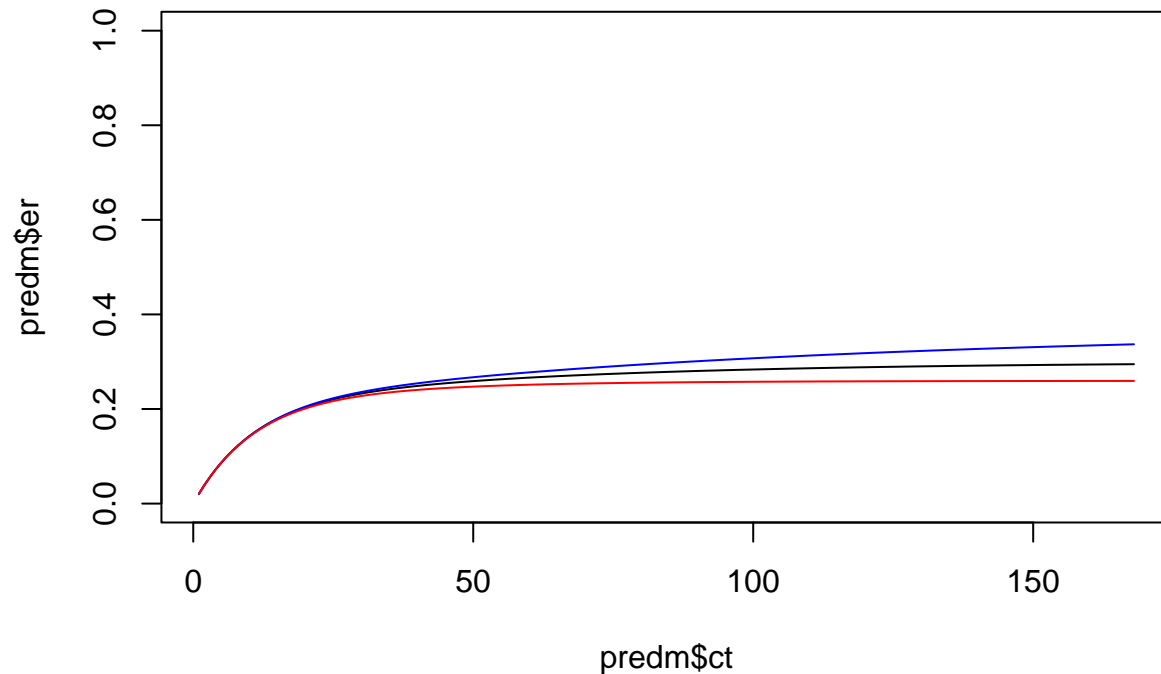
```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predh <- alfam2(dat, pars = parsh)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
plot(predm$ct, predm$er, type = 'l', col = 'black', ylim = c(0, 1))
lines(predl$ct, predl$er, type = 'l', col = 'blue')
lines(predh$ct, predh$er, type = 'l', col = 'red')
```



Try longer, 4 weeks.

```
dat <- data.table(ct = 1:168 * 4, TAN.app = 100)
predm <- alfam2(dat, pars = parsm)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predl <- alfam2(dat, pars = parsl)
```

```
## User-supplied parameters are being used.
```

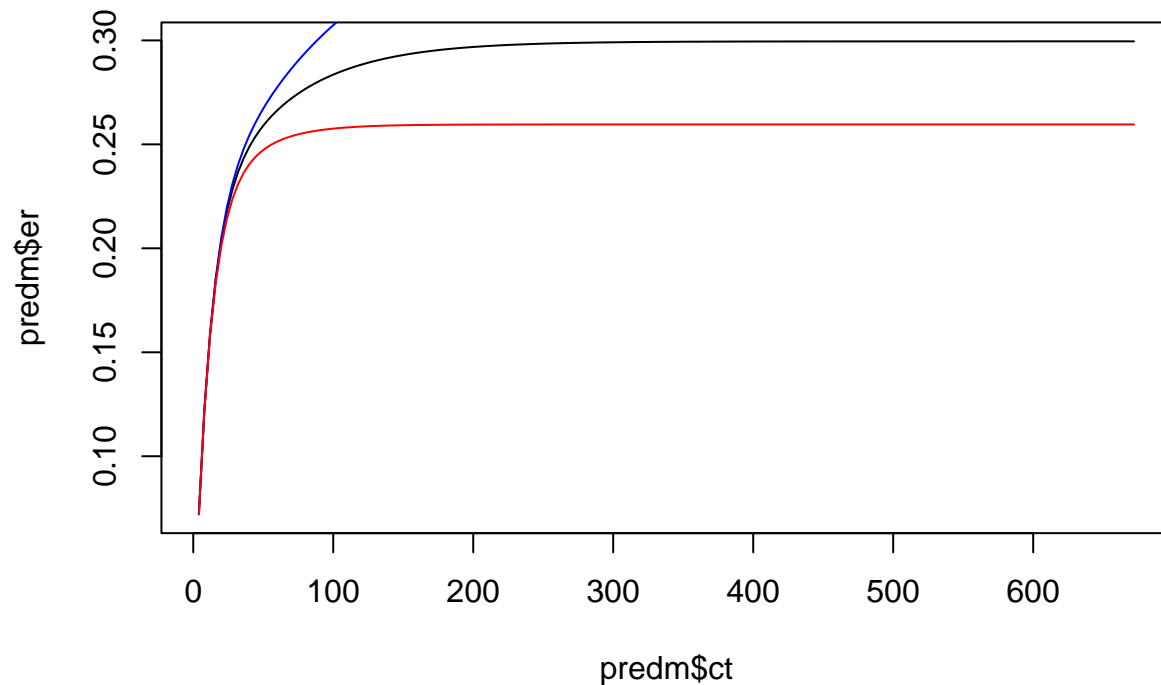
```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predh <- alfam2(dat, pars = parsh)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
plot(predm$ct, predm$er, type = 'l', col = 'black')
lines(predl$ct, predl$er, type = 'l', col = 'blue')
lines(predh$ct, predh$er, type = 'l', col = 'red')
```



Just the 2 times for a summary.

```
dat <- data.table(ct = 168 * c(1, 4), TAN.app = 100)
predm <- alfam2(dat, pars = parsm)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predl <- alfam2(dat, pars = parsl)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predh <- alfam2(dat, pars = parsh)
```

```
## User-supplied parameters are being used.
```

```
## Warning in prepDat(dat, warn = warn): Argument prep.dum = TRUE but there are no variables to convert
## Ignoring prep.dum = TRUE.
```

```
predl$er / predm$er - 1
```

```
## [1] 0.1426287 0.2266707
```

```
1 - predh$er / predm$er
```

```
## [1] 0.1200832 0.1334369
```