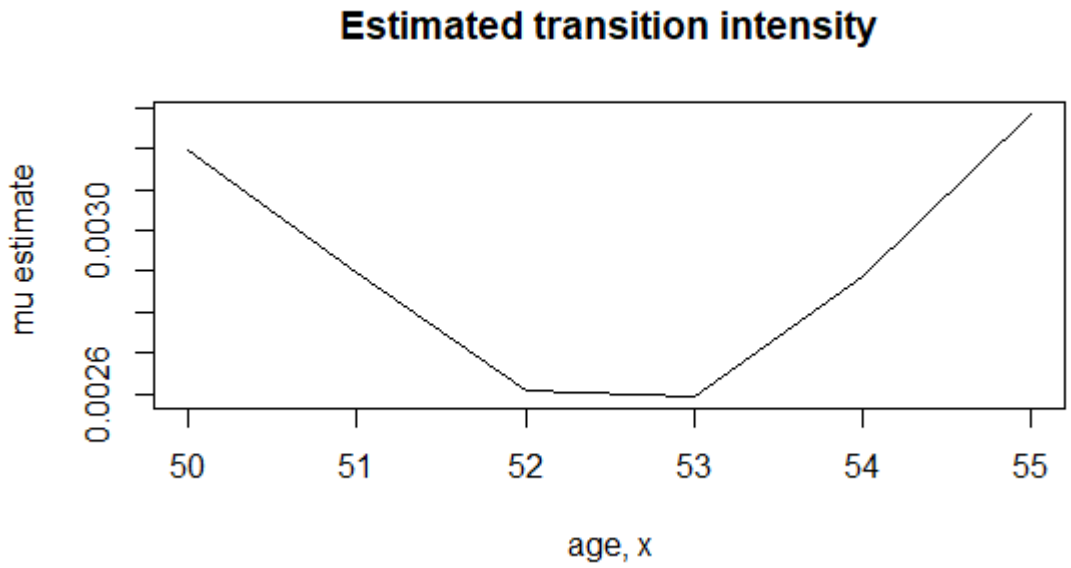
Lecture week 8 example exposed to risk calculation

The dataset EtoRCensusDataset.csv is on QM Plus

```
EtoRCensusDataset <- read.csv("C: /EtoRCensusDataset.csv")
>   View(EtoRCensusDataset)
> x <- EtoRCensusDataset$age
> d <- EtoRCensusDataset$deaths
> P1 = EtoRCensusDataset$start
> P2 = EtoRCensusDataset$midyear
> P3 = EtoRCensusDataset$end
> EtR = 0.5 * (0.5*P1 + P2 + 0.5*P3)
> # assuming census approx for E to R
> # mu_hat is my 2 state model transition intensity MLE by age x
> mu_hat = d / EtR
> mu_hat
[1] 0.003195845 0.002897248 0.002606124 0.002593646 0.002886937
0.003285053
> table <- cbind(x,mu_hat)
> table
      x      mu_hat
[1,] 50 0.003195845
[2,] 51 0.002897248
[3,] 52 0.002606124
[4,] 53 0.002593646
[5,] 54 0.002886937
[6,] 55 0.003285053
> plot(x, mu_hat, type = "l", xlab = "age, x", ylab = " mu
estimate", main = "Estimated transition intensity")
```



Note there are clearly some issues with this output (and hence the data that gives rise to it) – at ages 50 to 55 we would expect mu_x to be increasing exponentially not varying as above. In weeks 9 and 10 we will look at what to do in situations like this.