

monks

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Contents

manuscripts	1
mix	1
map	2
dzip	2

monks

reference: McElreath, Statistical Rethinking, chap 11, p.333

```
library(rethinking)
library(ggplot2)
```

manuscripts

mix

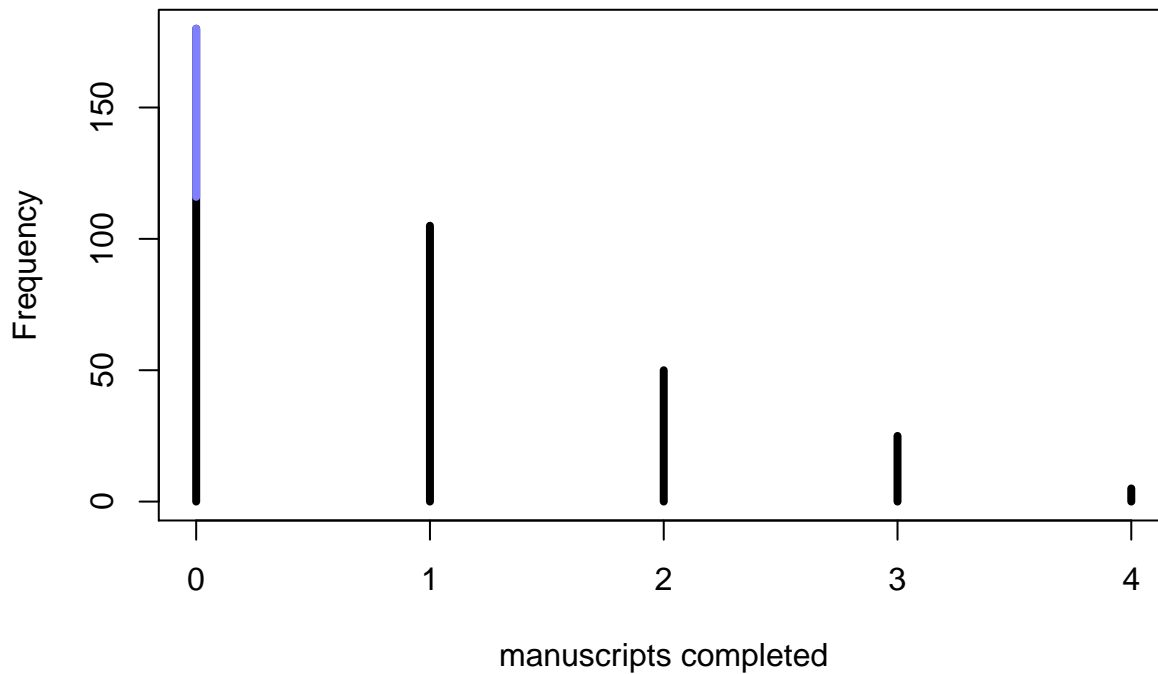
```
## R code 11.20
# define parameters
prob_drink <- 0.2 # 20% of days
rate_work <- 1   # average 1 manuscript per day

# sample one year of production
N <- 365

# simulate days monks drink
drink <- rbinom( N , 1 , prob_drink )

# simulate manuscripts completed
y <- (1-drink)*rpois( N , rate_work )

## R code 11.21
simplehist( y , xlab="manuscripts completed" , lwd=4 )
zeros_drink <- sum(drink)
zeros_work <- sum(y==0 & drink==0)
zeros_total <- sum(y==0)
lines( c(0,0) , c(zeros_work,zeros_total) , lwd=4 , col=rangi2 )
```



map

```
## R code 11.22
m11.4 <- map(
  alist(
    y ~ dzipois( p , lambda ),
    logit(p) <- ap,
    log(lambda) <- al,
    ap ~ dnorm(0,1),
    al ~ dnorm(0,10)
  ) ,
  data=list(y=y) )
precis(m11.4)
```

```
##      Mean StdDev  5.5% 94.5%
## ap -1.14  0.27 -1.57 -0.70
## al  0.08  0.08 -0.06  0.21
```

```
## R code 11.23
logistic(-1.39) # probability drink
```

```
## [1] 0.1994078
```

```
exp(0.05) # rate finish manuscripts, when not drinking
```

```
## [1] 1.051271
```

dzip

```
## R code 11.24
dzip <- function( x , p , lambda , log=TRUE ) {
```

```
ll <- ifelse(  
  x==0 ,  
  p + (1-p)*exp(-lambda) ,  
  (1-p)*dpois(x,lambda,FALSE)  
)  
if ( log==TRUE ) ll <- log(ll)  
return(ll)  
}
```