Bin Width calculation

There are many ways to determine bin size and width.

1st method

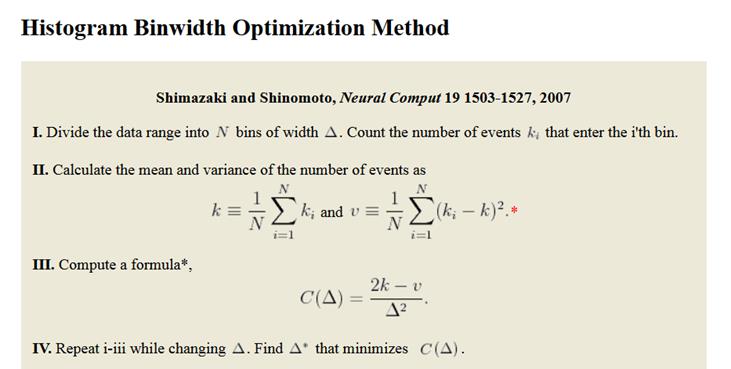
Bin width:

h = 2 \frac{\operatorname{IQR}(x)}{n^{1/3}},

The number of bins *k* can be assigned directly or can be calculated from a suggested bin width *h* as:

k = \left \lceil \frac{\max x - \min x}{h} \right \rceil.

2nd Method



This can be implemented in R easily.

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sshist <- function(x){

N <- 2: 100

C <- numeric(length(N))

D <- C

for (i in 1:length(N)) {

D[i] <- diff(range(x))/N[i]

edges = seq(min(x),max(x),length=N[i])

hp <- hist(x, breaks = edges, plot=FALSE )

ki <- hp$counts

k <- mean(ki)

v <- sum((ki-k)^2)/N[i]

C[i] <- (2\*k-v)/D[i]^2 #Cost Function

}

idx <- which.min(C)

optD <- D[idx]

edges <- seq(min(x),max(x),length=N[idx])

h = hist(x, breaks = edges )

rug(x)

return(h)

}