Untitled

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Contents

1 Setup

1.1 Libries

```
library(MASS)
```

1.2 Scripts

```
source(file = "./R/DC_LO_Sim.R")
```

2 Single Sim

Will use default of 1,000 runs with 2 sites

```
lockOut <- sim()
mean(lockOut)
```

```
## [1] 16.517
```

```
sd(lockOut)
```

```
## [1] 1.982332
```

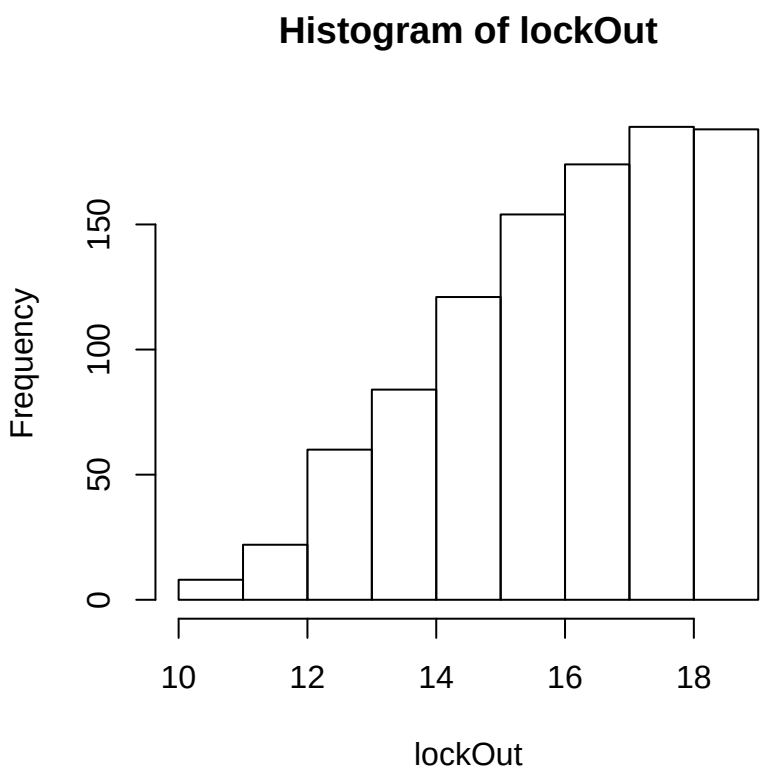
```
table(lockOut)
```

```
## lockOut
##  10  11  12  13  14  15  16  17  18  19
##   2   6  22  60  84 121 154 174 189 188
```

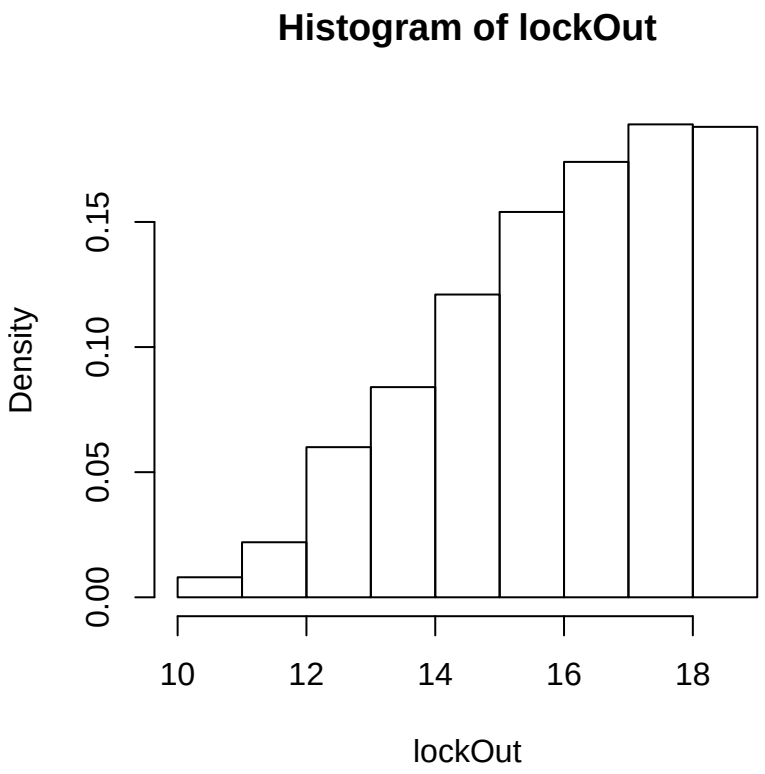
```r
prop.table(table(lockOut))*100
```

```
## lockOut
##    10    11    12    13    14    15    16    17    18    19
##  0.2   0.6   2.2   6.0   8.4 12.1 15.4 17.4 18.9 18.8
```

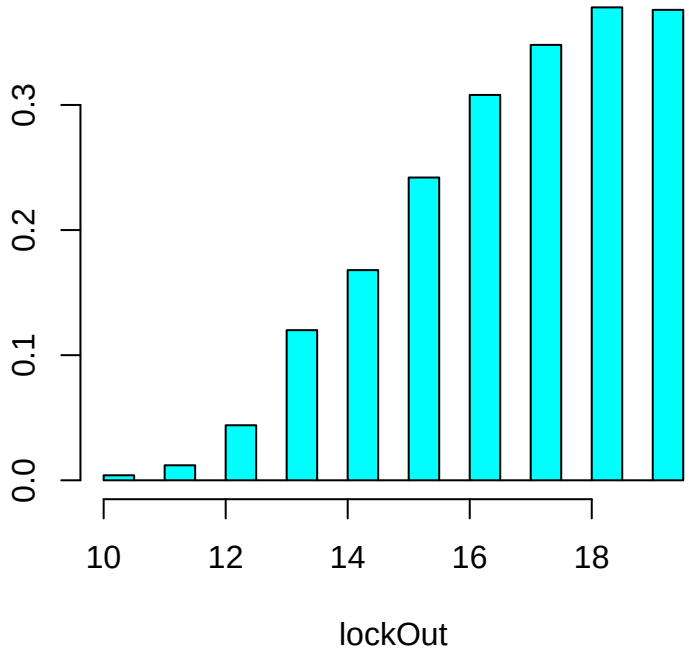
```r
hist(lockOut)
```




```r
hist(lockOut, freq = FALSE)
```



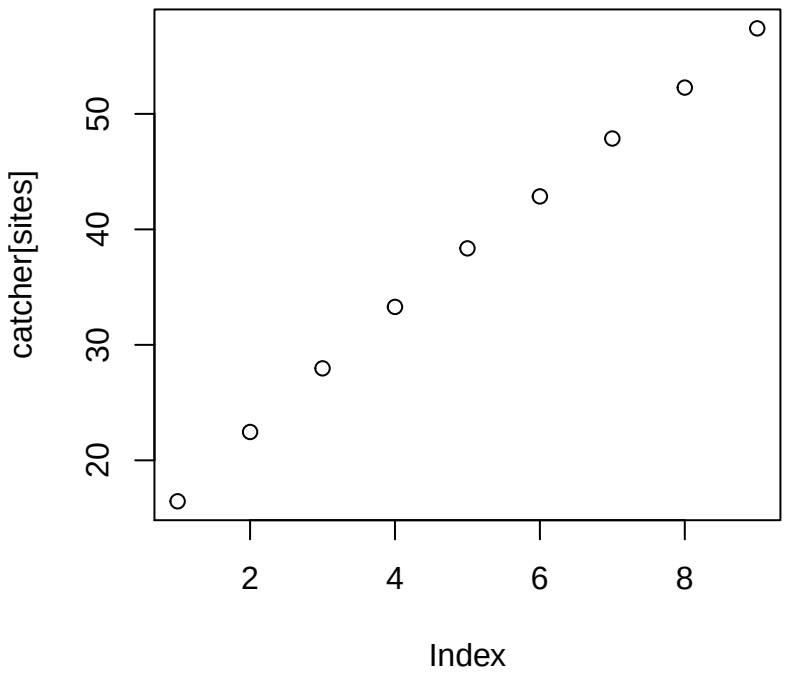

```
truehist(lockOut)
```



3 multiple Sites

Sim with 1,000 runs per site and from2 to 10 sites

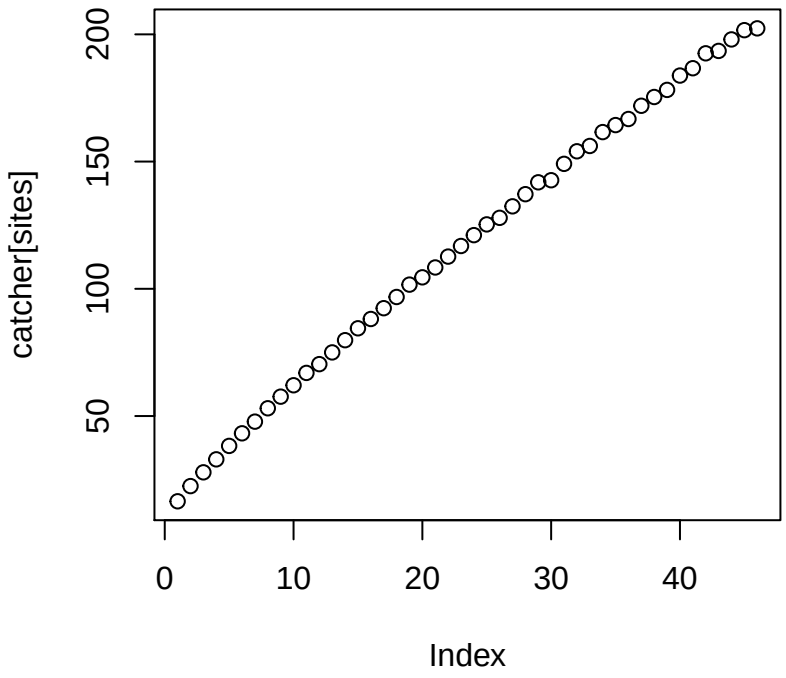
```
sites <- 2:10
run <- 1000
#rawData <- NULL
#rawData[1:max(sites)] <- 0
catcher <- NULL
catcher[1:max(sites)] <- 0
for (index in sites) {
     lockOut <- sim(run = run,
                    sites = index)
     #rawData[index] <- lockOut
     catcher[index] <- mean(lockOut)
}
plot(catcher[sites])
```



4 Microsoft sized

Assuming that the advertised 47 sites and bock up locations for Azure is all data centers and that some data centers serve as back up locations for other sites.

```
sites <- 2:47
run <- 1000
#rawData <- NULL
#rawData[1:max(sites)] <- 0
catcher <- NULL
catcher[1:max(sites)] <- 0
for (index in sites) {
     lockOut <- sim(run = run,
                    sites = index)
     #rawData[index] <- lockOut
     catcher[index] <- mean(lockOut)
}
plot(catcher[sites])
```



4.1 detialed look at 47 sites

```
lockOut <- sim(run = 1000,
               sites = 47)
mean(lockOut)
```

```
## [1] 204.918
```

```
sd(lockOut)
```

```
## [1] 34.41744
```

```
table(lockOut)
```

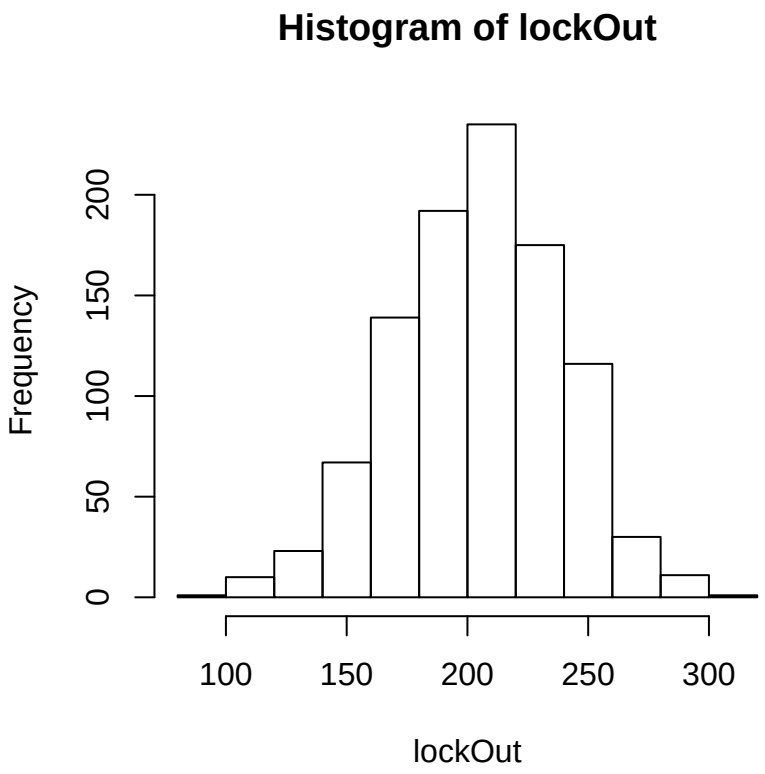
```
## lockOut
##  95 108 109 111 114 115 116 119 120 121 122 124 126 127 128 129 130 131 132 133
##   1   1   1   1   1   1   1   2   2   1   1   2   1   1   2   3   2   2   1   1
## 134 135 136 139 140 141 142 143 145 146 147 148 149 150 151 152 153 154 156 157
##   1   1   2   1   1   6   1   3   5   2   4   4   4   2   1   5   3   5   5   5
## 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177
##   1   8   3   6   5   6   2   4   7   8   8   7   6  10   6   5   6   8  12   6
## 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197
##  11   8   8  12   6   8   3  13  11  12  11  10   6   4   7  12   9   9  12  15
## 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217
##  10   9  13  12  10  11  12  14  11  11  13  13  12  18  12  13   9   9   8  15
## 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237
##   6  12  14  15  11  10   2   7  17   6   6   7  10  12   8  11  10   7  11   2
```

```
## 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257
##   9   6   8  11   2  10  11   7   8  10   7   6   4   4   5   7   1   5   4   1
## 258 259 260 261 262 263 264 265 266 267 268 270 272 273 274 275 276 277 278 279
##   4   3   6   2   3   3   2   1   1   1   1   3   1   2   2   1   3   2   1   1
## 281 282 283 284 285 289 290 294 303
##   3   1   1   1   1   1   2   1   1
```

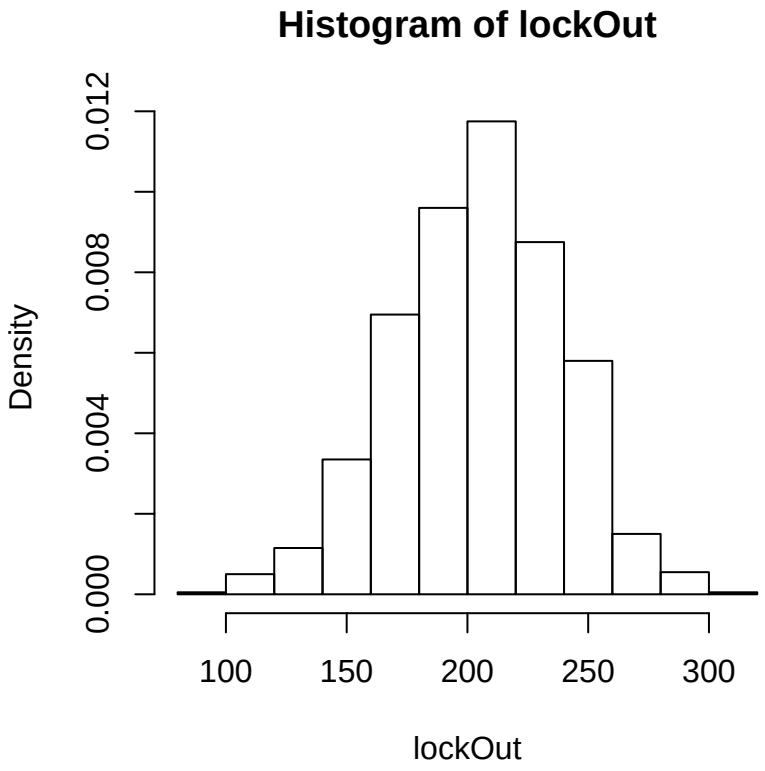
```
prop.table(table(lockOut))*100
```

```
## lockOut
##  95 108 109 111 114 115 116 119 120 121 122 124 126 127 128 129 130 131 132 133
## 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.2 0.2 0.1 0.1 0.2 0.1 0.1 0.2 0.3 0.2 0.2 0.1 0.1
## 134 135 136 139 140 141 142 143 145 146 147 148 149 150 151 152 153 154 156 157
## 0.1 0.1 0.2 0.1 0.1 0.6 0.1 0.3 0.5 0.2 0.4 0.4 0.4 0.2 0.1 0.5 0.3 0.5 0.5 0.5
## 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177
## 0.1 0.8 0.3 0.6 0.5 0.6 0.2 0.4 0.7 0.8 0.8 0.7 0.6 1.0 0.6 0.5 0.6 0.8 1.2 0.6
## 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197
## 1.1 0.8 0.8 1.2 0.6 0.8 0.3 1.3 1.1 1.2 1.1 1.0 0.6 0.4 0.7 1.2 0.9 0.9 1.2 1.5
## 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217
## 1.0 0.9 1.3 1.2 1.0 1.1 1.2 1.4 1.1 1.1 1.3 1.3 1.2 1.8 1.2 1.3 0.9 0.9 0.8 1.5
## 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237
## 0.6 1.2 1.4 1.5 1.1 1.0 0.2 0.7 1.7 0.6 0.6 0.7 1.0 1.2 0.8 1.1 1.0 0.7 1.1 0.2
## 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257
## 0.9 0.6 0.8 1.1 0.2 1.0 1.1 0.7 0.8 1.0 0.7 0.6 0.4 0.4 0.5 0.7 0.1 0.5 0.4 0.1
## 258 259 260 261 262 263 264 265 266 267 268 270 272 273 274 275 276 277 278 279
## 0.4 0.3 0.6 0.2 0.3 0.3 0.2 0.1 0.1 0.1 0.1 0.3 0.1 0.2 0.2 0.1 0.3 0.2 0.1 0.1
## 281 282 283 284 285 289 290 294 303
## 0.3 0.1 0.1 0.1 0.1 0.1 0.2 0.1 0.1
```

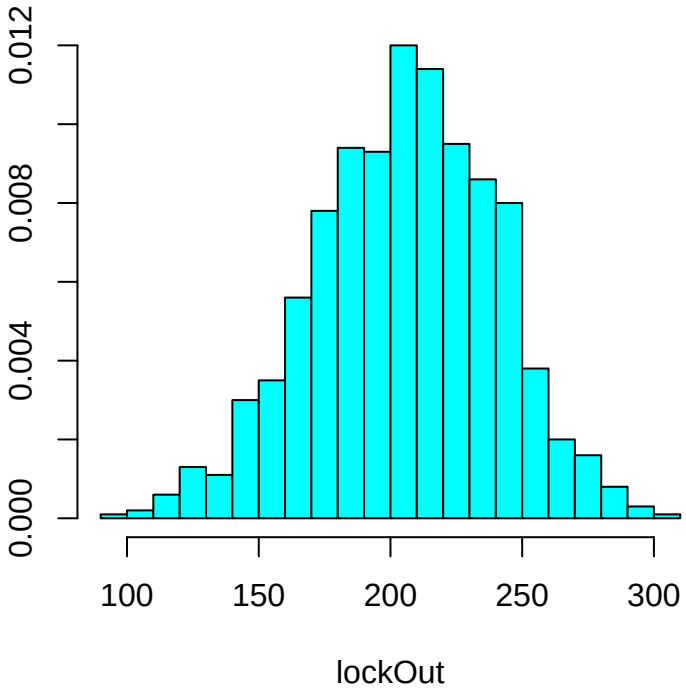
```
hist(lockOut)
```




```
hist(lockOut, freq = FALSE)
```




```
truehist(lockOut)
```


0.000
0.004
0.008
0.012
100
150
200
250
300
lockOut