Cumulative Plot

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Number of Deaths by Horsekicks

프러시아에서 20년간 14개 연대에서 발생한 말발굽에 의한 사망 사고 기록

```
n.deaths<-0:4
n.camps<-c(144,91,32,11,2)
horsekick<-data.frame(n.deaths=n.deaths, n.camps=n.camps)
horsekick
```
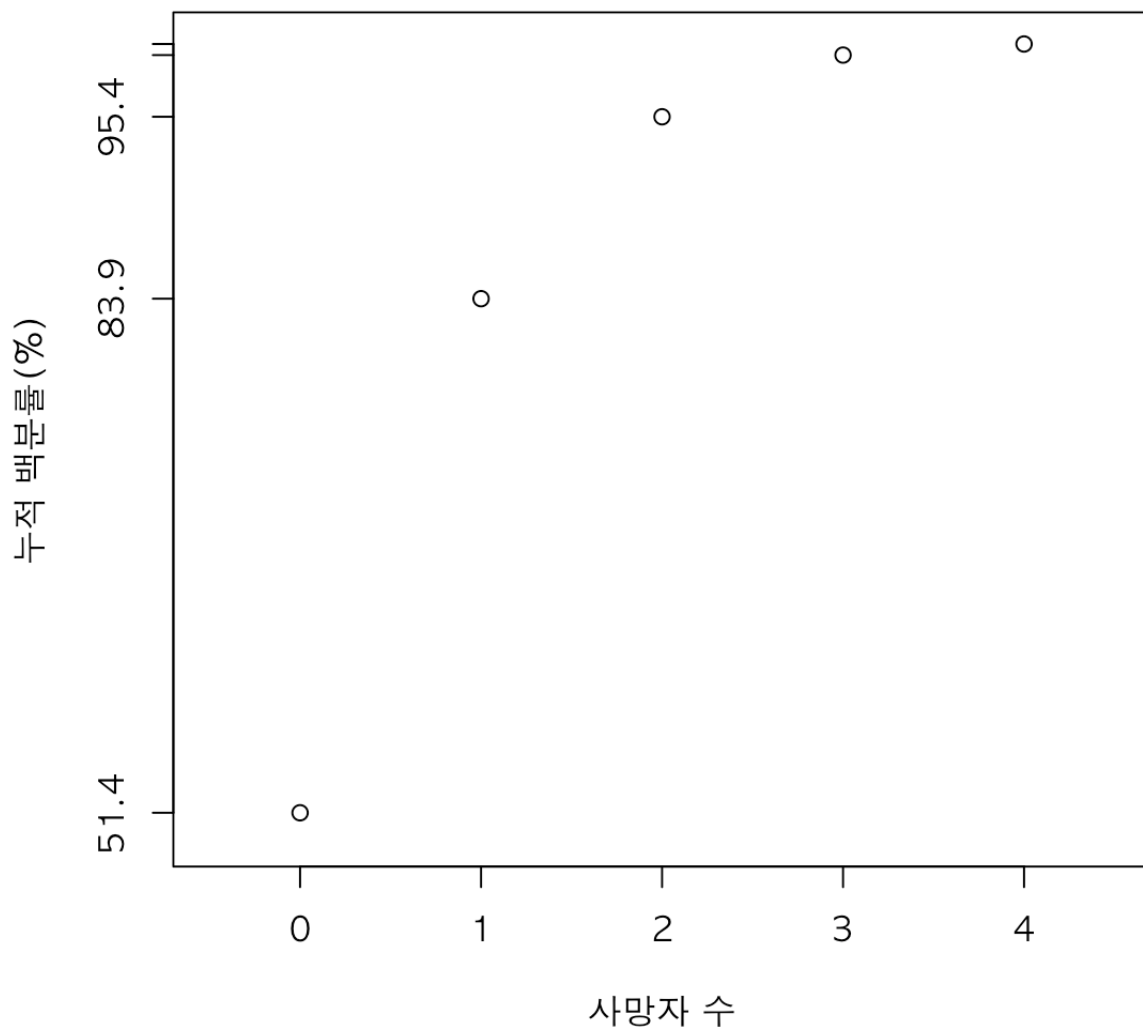
```
##   n.deaths n.camps
## 1        0     144
## 2        1      91
## 3        2      32
## 4        3      11
## 5        4       2
```

위 자료를 누적분포로 도식화하기 위한 첫 작업

```
options(digits=2)
horsekick.p<-n.camps/sum(n.camps)
horsekick.p
```

```
## [1] 0.5143 0.3250 0.1143 0.0393 0.0071
```

```
horsekick.cum<-round(cumsum(horsekick.p)*100, digits=1)
plot(n.deaths, horsekick.cum, xlim=c(-0.5,4.5), ylim=c(50,100), xlab="사망자 수",
ylab="누적 백분률(%)", yaxt="n")
axis(side=2,at=horsekick.cum, labels=horsekick.cum)
```
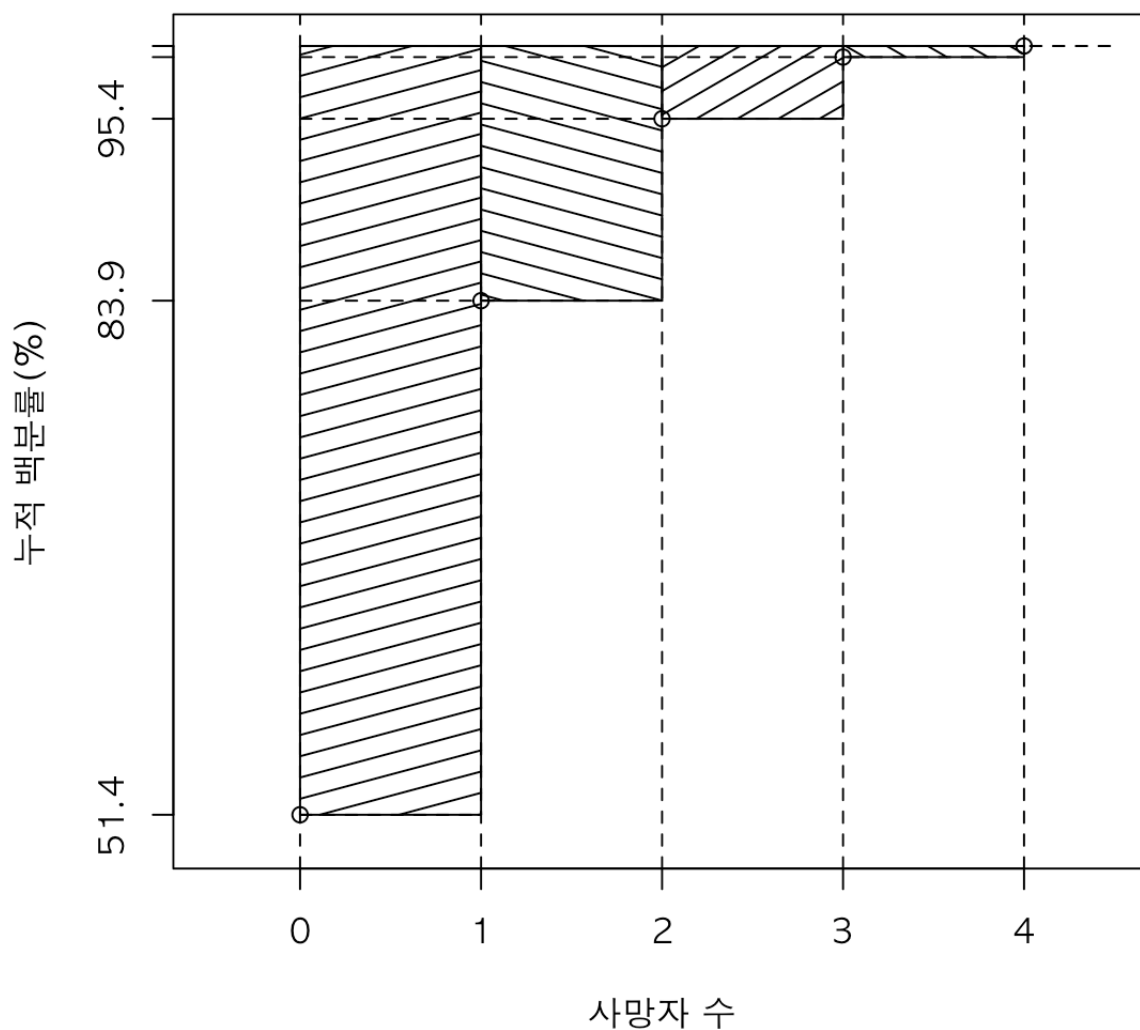
누적 분포를 알기 쉽도록 격자 설정

```
options(digits=2)
plot(n.deaths, horsekick.cum, xlim=c(-0.5,4.5), ylim=c(50,100), xlab="사망자 수",
ylab="누적 백분률(%)", yaxt="n")
axis(side=2,at=horsekick.cum, labels=horsekick.cum)
abline(v=0:5, lty=2)
lines(c(0,1), rep(horsekick.cum[1], 2), lty=2)
lines(c(0,2), rep(horsekick.cum[2], 2), lty=2)
lines(c(0,3), rep(horsekick.cum[3], 2), lty=2)
lines(c(0,4), rep(horsekick.cum[4], 2), lty=2)
lines(c(0,4.5), rep(horsekick.cum[5], 2), lty=2)
```
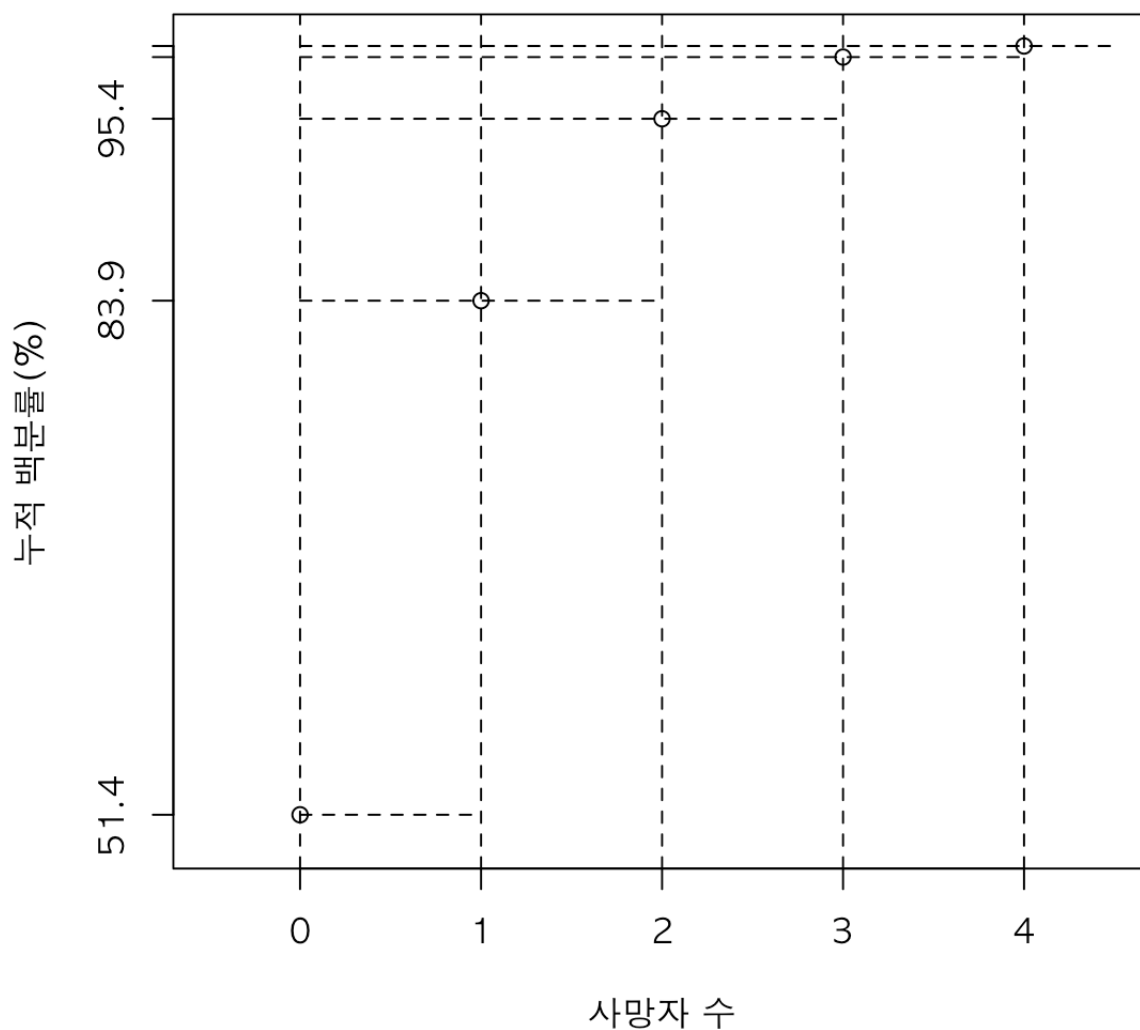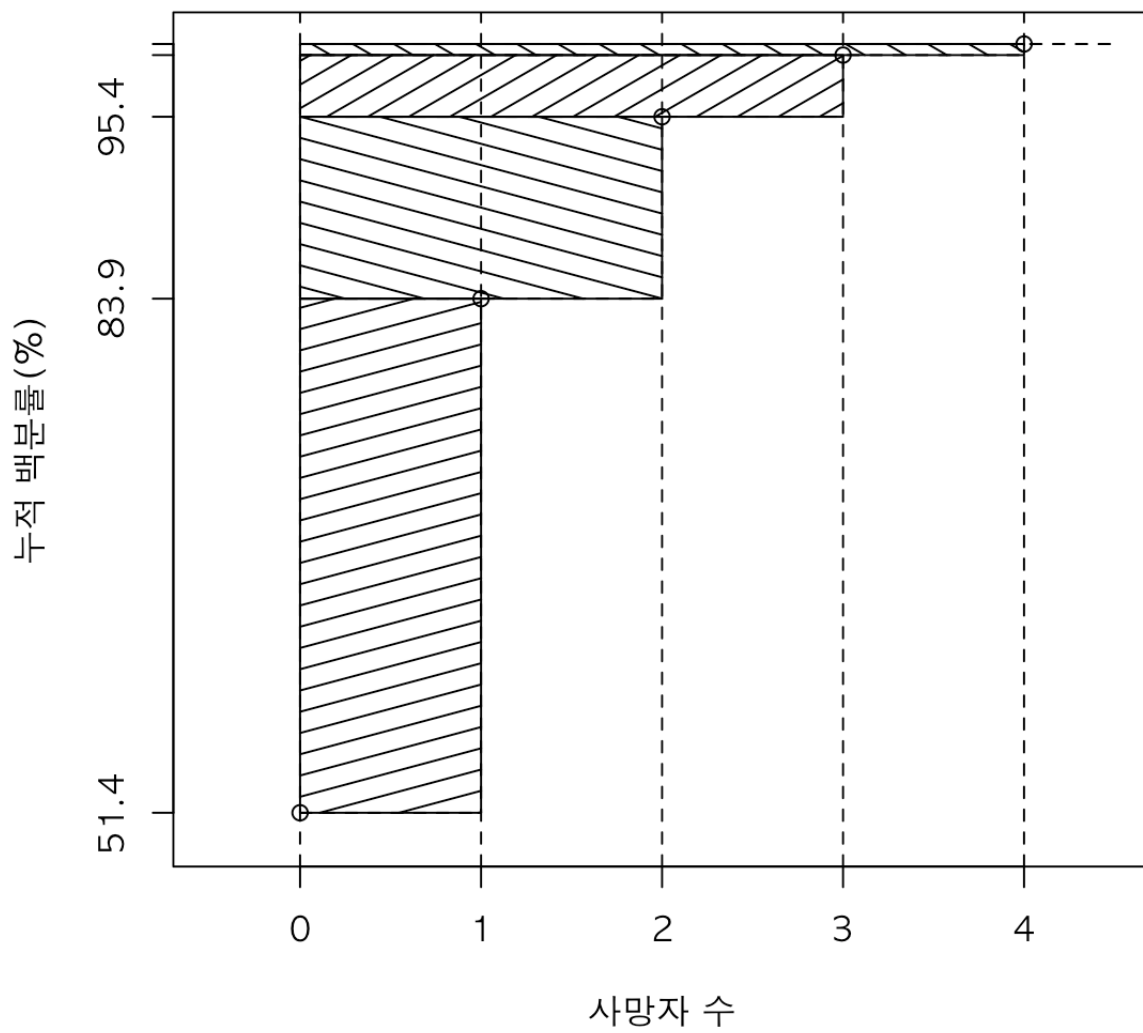
누적분포 윗 면적을 명확히 표시하기 위하여 빗금

```
options(digits=2)
plot(n.deaths, horsekick.cum, xlim=c(-0.5,4.5), ylim=c(50,100), xlab="사망자 수",
ylab="누적 백분률(%)", yaxt="n")
axis(side=2,at=horsekick.cum, labels=horsekick.cum)
abline(v=0:5, lty=2)
lines(c(0,1), rep(horsekick.cum[1], 2), lty=2)
lines(c(0,2), rep(horsekick.cum[2], 2), lty=2)
lines(c(0,3), rep(horsekick.cum[3], 2), lty=2)
lines(c(0,4), rep(horsekick.cum[4], 2), lty=2)
lines(c(0,4.5), rep(horsekick.cum[5], 2), lty=2)
polygon(c(0,1,1,0),c(rep(horsekick.cum[1],2), rep(horsekick.cum[5],2)), densit
y=10, angle=15)
polygon(c(1,2,2,1),c(rep(horsekick.cum[2],2), rep(horsekick.cum[5],2)), densit
y=10, angle=165)
polygon(c(2,3,3,2),c(rep(horsekick.cum[3],2), rep(horsekick.cum[5],2)), densit
y=10, angle=30)
polygon(c(3,4,4,3),c(rep(horsekick.cum[4],2), rep(horsekick.cum[5],2)), densit
y=10, angle=150)
```

누적분포 윗 면적이 곧 평균임을 나타내기 위해 막대를 다른 방향으로 집적.

```
options(digits=2)
plot(n.deaths, horsekick.cum, xlim=c(-0.5,4.5), ylim=c(50,100), xlab="사망자 수",
ylab="누적 백분률(%)", yaxt="n")
axis(side=2,at=horsekick.cum, labels=horsekick.cum)
abline(v=0:5, lty=2)
lines(c(0,1), rep(horsekick.cum[1], 2), lty=2)
lines(c(0,2), rep(horsekick.cum[2], 2), lty=2)
lines(c(0,3), rep(horsekick.cum[3], 2), lty=2)
lines(c(0,4), rep(horsekick.cum[4], 2), lty=2)
lines(c(0,4.5), rep(horsekick.cum[5], 2), lty=2)
polygon(c(0,1,1,0),c(rep(horsekick.cum[1],2),rep(horsekick.cum[2],2)), densit
y=10, angle=15)
polygon(c(0,2,2,0),c(rep(horsekick.cum[2],2),rep(horsekick.cum[3],2)), densit
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polygon(c(0,3,3,0),c(rep(horsekick.cum[3],2),rep(horsekick.cum[4],2)), densit
y=10, angle=30)
polygon(c(0,4,4,0),c(rep(horsekick.cum[4],2),rep(horsekick.cum[5],2)), densit
y=10, angle=150)
```

이번에 쌓아놓은 막대 면적의 합은 평균을 계산한 것임을 확인.