This is the specific R code for the formulation of our nomogram.

```
> library(rms)

> library(foreign)
> bc <- read.spss("D:/SEER.sav", use.value.labels=F, to.data.frame=T)
> bc <- na.omit(bc)
> dd <- datadist(bc)
> options(datadist="dd")
> f <- cph(Surv(months, status) ~ Nstage + Mstage + Grade + surgery, x=T, y=T, surv=T,
data=bc, time.inc=12)
> surv <- Survival(f)
> nom <- nomogram(f, fun=list(function(x) surv(12, x), function(x) surv(24, x), function(x)
surv(36, x)), lp=F, funlabel=c("1-year survival", "2-year survival", "3-year survival"),
maxscale=10, fun.at=c(0.95, 0.9, 0.85, 0.8, 0.75, 0.7, 0.6, 0.5))
> plot(nom)    nomogram formulation completion
> validate(f, method="boot", B=1000, dxy=T)
          index.orig training     test optimism index.corrected       n
Dxy           0.8275     0.8294 0.8252     0.0042                0.8233 1000
R2            0.4337     0.4399 0.4290     0.0110                0.4228 1000
Slope         1.0000     1.0000 0.9665     0.0335                0.9665 1000
D             0.1910     0.1942 0.1882     0.0060                0.1850 1000
```

```
U            -0.0007    -0.0007 0.0006    -0.0012                0.0006 1000

Q             0.1916     0.1949 0.1877     0.0072                0.1844 1000

g             1.8167     1.8540 1.7890     0.0650                1.7516 1000

> rcorrcens(Surv(months, status) ~ predict(f), data = bc)


                      C       Dxy    aDxy       SD        Z P       n

predict(f) 0.086 -0.828 0.828 0.012 68.19 0 1116

>

> f1 <- cph(Surv(months, status) ~ Nstage + Mstage + Grade + surgery, x=T, y=T, surv=T,

data=bc, time.inc=12)

> cal1 <- calibrate(f1, cmethod="KM", method="boot", u=12, m=300, B=1000)

> par(mar=c(8,5,3,2),cex = 1.0)

> plot(cal1)


> f2 <- cph(Surv(months, status) ~ Nstage + Mstage + Grade + surgery, x=T, y=T, surv=T,

data=bc, time.inc=24)

> cal2 <- calibrate(f2, cmethod="KM", method="boot", u=24, m=300, B=1000)

> par(mar=c(8,5,3,2),cex = 1.0)

> plot(cal2)

> f3 <- cph(Surv(months, status) ~ Nstage + Mstage + Grade + surgery, x=T, y=T, surv=T,

data=bc, time.inc=36)

> cal3 <- calibrate(f3, cmethod="KM", method="boot", u=36, m=300, B=1000)
```

> plot(cal3) **internal calibration curve formulation completion**

> rc <- read.spss("D:/rNEC.sav", use.value.labels=F, to.data.frame=T)

> rc <- na.omit(rc)

> dd <- datadist(rc)

> bcev <- rc[1:41, c(18,21:22)]

> fev <- cph(Surv(months, status) ~ predict(f, newdata=bcev), x=T, y=T, surv=T, data=bcev, time.inc=12)

> validate(fev, method="boot", B=1000, dxy=T)

	index.orig	training	test	optimism	index.corrected	n
Dxy	0.8108	0.8106	0.8108	-0.0002	0.8111	1000
R2	0.4389	0.4405	0.4389	0.0016	0.4372	1000
Slope	1.0000	1.0000	0.9932	0.0068	0.9932	1000
D	0.1925	0.1937	0.1925	0.0012	0.1914	1000
U	-0.0011	-0.0011	0.0006	-0.0017	0.0006	1000
Q	0.1937	0.1948	0.1920	0.0029	0.1908	1000
g	1.7913	1.8087	1.7913	0.0174	1.7739	1000

> rcorrcens(Surv(Survivalmonths, SEERcausespecificdeathclassification) ~ predict(f, newdata=bcev), data = bcev)

	C	Dxy	aDxy	SD	Z	P	n
predict(f, newdata = bcev)	0.095	-0.811	0.811	0.017	47.13	0	640

> fev1 <- cph(months, status) ~ predict(f, newdata=bcev), x=T, y=T, surv=T, data=bcev,

time.inc=12)

> calev1 <- calibrate(fev1, cmethod="KM", method="boot", u=12, m=400, B=1000)

> plot(calev1)

> fev2 <- cph(Surv(months, status) ~ predict(f, newdata=bcev), x=T, y=T, surv=T, data=bcev, time.inc=24)

> calev2 <- calibrate(fev2, cmethod="KM", method="boot", u=24, m=300, B=1000)

> plot(calev2)

> fev3 <- cph(Surv(months, status) ~ predict(f, newdata=bcev), x=T, y=T, surv=T, data=bcev, time.inc=36)

> calev3 <- calibrate(fev3, cmethod="KM", method="boot", u=36, m=300, B=1000)

> plot(calev3) external calibration curve formulation completion