# Target PCA

```r
library(MASS)
library(panelView)
```

```
## ## See bit.ly/panelview4r for more info.
## ## Report bugs -> yiqingxu@stanford.edu.
```

## Simulation data

```r
Nx = Ny = T = 200
sigma_x = 16
sigma_y = 4




Ft = rep(1, Ny)%x%mvrnorm(T, c(0,0), diag(2))
Lamy = mvrnorm(Ny, c(0,0), diag(2))%x%rep(1, Ny)
Lamx = mvrnorm(Nx, c(0,0), diag(2))%x%rep(1, Ny)


Ft = mvrnorm(T, c(0,0), diag(2))
Lamy = mvrnorm(Ny, c(0,0), diag(2))
Lamx = mvrnorm(Nx, c(0,0), diag(2))

ex = rnorm(Nx*T, 0, sigma_x)
ey = rnorm(Ny*T, 0, sigma_y)

d_rep  = data.frame(period = rep(1, Nx)%x%(1:T),
                    unit = (1:Nx)%x%rep(1, T),
                    X = c(t(Ft%*%t(Lamx))) + ex,
                    Yinit = c(t(Ft%*%t(Lamy))) + ey)

d_rep$Ylowfreq = d_rep$Yinit
d_rep$Ylowfreq[d_rep$unit%in%(2*(1:(Nx/2))-1)] = NA
d_rep$Ylowfreq[d_rep$period%in%(2*(1:(T/2))-1)] = NA


panelview(d_rep,
          Y="X",
          index=c("unit","period"),
          type="missing",
          leave.gap=TRUE)
```
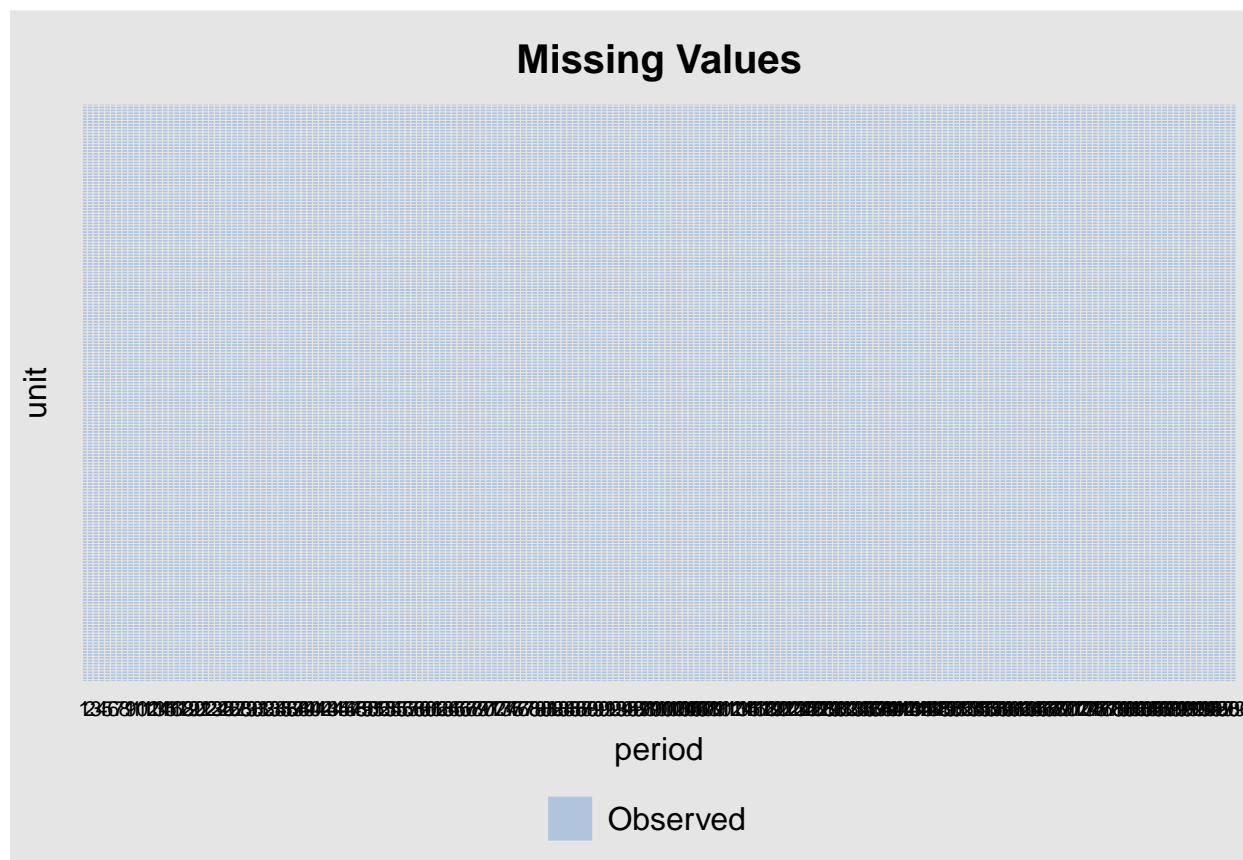
**Missing Values**

unit / period / Observed

```r
panelview(d_rep,
          Y="Ylowfreq",
          index=c("unit","period"),
          type="missing",
          leave.gap=TRUE)
```

**Missing Values**

Observed    Missing