**Several useful R graphs**

**Example 1: Multiple graphs on one page using mfrow, unequal axes**

> par(mfrow=c(2,3))

> n <- c(1,3,6,10,15,20)

>

> for( i in 1:6 ){

+ x.mean <- rep(NA, 1000)

+ for( j in 1:1000 ){

+ x <- rexp( n=n[i], rate=0.5 )

+ x.mean[j] <- mean( x )

+ }

+ hist( x.mean, xlim=c(0, 15), main=paste( "Xbar for n=", n[i] ), xlab="Xbar" )

+ }

>



**Example 2: Multiple graphs on one page using panels and ggplot2, equal scales**

**library( ggplot2 )**

**### Simulate example data for 25 subjects, 100 obs per subject**

**### len = outcome**

**n.subj <-25**

**n.time <- 100**

**len.vec <- NULL**

**time.vec <- NULL**

**subj.vec <- NULL**

**for( i in 1:n.subj ){**

**len <- i \* 2 + 0.02 \* c(1:n.time) + rnorm( n.time, mean=10, sd=3 )**

**len.vec <- c(len.vec, len)**

**time.vec <- c(time.vec, 1:n.time)**

**subj.vec <- c(subj.vec, rep(i, n.time))**

**}**

**sub <- subj.vec # Simpler label on graph**

**data.fr <- data.frame( cbind( sub, time.vec, len.vec ) )**

d <- ggplot(data.fr, aes(time.vec, len.vec) ) + geom\_point()

d + facet\_wrap(~ sub)



**Example 3: Pairwise scatterplots for multiple variables**

**x <- rnorm( n=50, mean=2, sd=7 )**

**y <- .5\*x^2 + 2\*x - 3 + rnorm( n=50, mean=0, sd=15 )**

**z <- x + rnorm( n=50, mean=0, sd=10 )**

**xyz.fr <- data.frame( cbind( x, y, z ) )**

**# Pairwise plots**

**pairs( xyz.fr )**



**Example 4: Shifted groups**

Another useful graph for cross-sectional data with grouping variables is below. The outcome is Y, the predictors are X (takes values 3, 5, 6), and Group (G = 1, 2). Group is coded by color and also shifted a bit using the line in red. The shifting is easy in any graphics software.

set.seed( 20190818 )

X1 <- c( rep(3, 5), rep(5, 12), rep(6, 8) )

X2 <- X1 + 0.1

N <- length( X1 )

Y1 <- c( rnorm( n=5, mean=10, sd=4 ), rnorm( n=12, mean=8, sd=8 ), rnorm( n=8, mean=14, sd=5 ) )

Y2 <- Y1 + rnorm( N, mean=0, sd=2 )

X <- c( X1, X2 )

Y <- c( Y1, Y2 )

G <- c( rep(1, N), rep(2, N) )

plot( X, Y, col=G )

