library(ggplot2)

library(reshape2)

set.seed(100)

data <- data.frame(x = rnorm(100, 2, 1), y = rnorm(100, 1, 1))

data$id <- 1:nrow(data)

data2 <- melt(data, id.vars = "id")

lapply(data, function(x) get\_summary\_stats(data.frame(x)))

# $x

# # A tibble: 1 x 13

# variable n min max median q1 q3 iqr mad mean sd se ci

# <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>

# 1 x 100 -0.272 4.58 1.94 1.39 2.66 1.26 0.974 2.00 1.02 0.102 0.203

#

# $y

# # A tibble: 1 x 13

# variable n min max median q1 q3 iqr mad mean sd se ci

# <chr> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl>

# 1 x 100 -1.14 3.17 0.927 0.568 1.45 0.878 0.648 1.01 0.796 0.08 0.158

data$diff <- data$x - data$y

shapiro.test(data$diff)

# Shapiro-Wilk normality test

#

# data: data$diff

# W = 0.98792, p-value = 0.5024

t.test(data$x, data$y, paired = T)

# Paired t-test

#

# data: data$x and data$y

# t = 7.2039, df = 99, p-value = 1.165e-10

# alternative hypothesis: true difference in means is not equal to 0

# 95 percent confidence interval:

# 0.7186033 1.2649401

# sample estimates:

# mean of the differences

# 0.9917717

wilcox.test(data$x, data$y, paired = T)

# Wilcoxon signed rank test with continuity correction

#

# data: data$x and data$y

# V = 4287, p-value = 1.39e-09

# alternative hypothesis: true location shift is not equal to 0

ggplot(data = data2, aes(x = variable, y = value)) +

geom\_line(aes(group = id))+

geom\_point(aes(color = variable))