

## Erratum to R script

7/27/2018

### 1. Binary Model

#### Section 1.4) Computing SD/Factor Change Coefficients

The previous version (*brm-p1-v3*) did not include any calculation of y-standardized coefficients for both the logit and probit model, which we do manually in R.

#### Updated Version

The updated version, *brm-p1-v4*, now include codes for calculating y-standardized coefficients:

#### Code for Logit:

```
## y-standardized coefficient
pi <- 3.14
var_of_e <- (pi^2)/3
y_hat <- predict(mod.log)
var_of_yhat <- var(y_hat)
lat_sd_of_y <- sqrt(var_of_yhat + var_of_e)
## Dived the coefficients with the latent sd
sdY<-mod.log$coefficients[c(2,3,4,5)]/lat_sd_of_y
```

#### Code for Probit

```
## y-standardized coefficient
var_of_e <- 1
y_hat <- predict(mod.probit)
var_of_yhat <- var(y_hat)
lat_sd_of_y <- sqrt(var_of_yhat + var_of_e)
## Dived the coefficients with the latent sd
sdY<-mod.probit$coefficients[c(2,3,4,5)]/lat_sd_of_y
```

The updated version also incorporates the y-standardized coefficients to the logit summary table:

#### Old Version

```
facOdds <- cbind(bHat, exp(bHat), exp(bHat*sdX), sdX, zscores)
colnames(facOdds) <- c("b", "e^b", "e^(b*sd)", "SD of X", "Z-values")
facOdds
```

#### Updated Version

```
facOdds <- cbind(bHat, exp(bHat), exp(bHat*sdX), sdX, sdY, zscores)
colnames(facOdds) <- c("b", "e^b", "e^(b*sd)", "SD of X", "bStdY", "Z-
values")
facOdds
```

Note: Besides the r-script, these changes have also been included to current r-lab guide, version 5.

## 2. Nominal Model

### Section 5.8) Plot Marginal Effects Plot

The current version, *nominal-p3*, does not correctly plot the marginal effect on outcome probability for both gender and number of citations. This is primarily because we need to (1) create a new “data-frame” that includes the effects for the variables of interest, and (2) then use *facet* to illustrate the effect of multiple variables at the same time.

#### Old Version

This code is only saving the marginal effect for gender and the axis for the plot are incorrect, making it difficult to see any patterns:

```
mnlpred1 <- as.numeric(diff.fem)
mnlpred1 <- as.data.frame(cbind(rbind("1_Adeq", "2_Good", "3_Strong",
"4_Dist"), mnlpred1))
colnames(mnlpred1) <- c("category", "Discretechange")
mnlpred1$Discretechange <- as.numeric(mnlpred1$Discretechange)
plot3 <- ggplot(mnlpred1, aes(x=category,y=Discretechange, ymax=4.1,
col=category)) + geom_point() + geom_text(aes(label=category), hjust=0.2,
vjust=-0.7) + labs(title="Discrete Change in Probabilities for Gender")
plot3 + theme(axis.text.x=element_blank(), legend.position = "none")
```

#### Updated version

The updated version, *nominal-p4*, now includes the codes for creating a new data-frame, which we can then use to plot the marginal effect on the outcome for our two variables:

```
## Save data
dataorplot <- data.frame(class = c("1_Adeq", "2_Good", "3_Strong", "4_Dist",
"1_Adeq", "2_Good", "3_Strong", "4_Dist"),
mem = c(diff.fem[2], diff.fem[3], diff.fem[4],
diff.fem[1], diff.mcit[2], diff.mcit[3],
diff.mcit[4], diff.mcit[1]),
cat = c(rep("female1_Yes", 4), rep("mcit3 (sd
units)", 4)))
plot <- ggplot(dataorplot, aes(y=cat, x=mem, xmin = -.21, xmax=0.3,
col=class)) +
geom_point() +
geom_text(aes(label=class), hjust = .5, vjust = -1) +
labs(x = "Marginal Effect on Outcome Probability") + facet_grid(cat ~ .) +
scale_x_continuous(position = "bottom", breaks = c(-.21, -.09, 0, .04, .16,
.28))
plot + theme(axis.text.y=element_blank(), axis.title.y = element_blank(),
axis.ticks.y = element_blank(), legend.position = "none")
```

**Note:** Besides the r-script, these changes have also been included to an updated r-lab guide, version 6.