R code documentation Covid - Chile Food Anxiety - Appetite paper

Gabriel Gonzalez Medina

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Preparing data

Importing

```
library(dplyr)
```

```
## Warning: package 'dplyr' was built under R version 3.6.3
```

```
library(readxl)
```

Import excel (from google forms) raw data

```
covid_base_Chile <- read_excel("C:/Users/ggonzalezm/Desktop/Centro investigación UDLA Nutri-Psico/COVID
                               col_names = FALSE)
```

```
## New names:
## * `` -> ...1
## * `` -> ...2
## * `` -> ...3
## * `` -> ...4
## * `` -> ...5
## * ...
```

```
glimpse(covid_base_Chile)
```

```
## Rows: 1,795
## Columns: 71
## $ ...1  <chr> "ID", "Marca temporal", "43924.459642152782", "43924.45973899...
## $ ...2  <chr> "v1", "¿Desea seguir participando del estudio?", "Si", "Si", ...
## $ ...3  <chr> "v2", "Usted en la actualidad ¿está realizando algún tipo de ...
## $ ...4  <chr> "v3", "¿Cuánto tiempo lleva en \"cuarentena\" o medida de ais...
## $ ...5  <chr> "v4", "¿Ha estado en contacto con alguna persona confirmada p...
## $ ...6  <chr> "v5", "¿Tiene ud. diagnóstico confirmado de Covid-19?", "No",...
## $ ...7  <chr> "v6", "¿Cual es tu género?", "Masculino", "Masculino", "Mascu...
## $ ...8  <chr> "v7", "Edad", "23", "23", "51", "23", "41", "44", "52", "45",...
```

```
## $ ...9  <chr> "v8", "Nacionalidad", "Chilena", "Chilena", "Chilena", "Chile...
## $ ...10 <chr> "v9", "Su nivel más alto de escolaridad es", "Universitaria  ...
## $ ...11 <chr> "v10", "En ámbito ocupacional, Ud. es", "Trabajador independi...
## $ ...12 <chr> "v11", "¿Cuál es la región donde usted reside?", "VIII región...
## $ ...13 <chr> "v12", "Considerando que un hogar se compone por personas que...
## $ ...14 <chr> "v13", "¿A cuál nivel socioeconómico cree Ud. que pertenece?"...
## $ ...15 <chr> "v14", "Toma bebidas gaseosas o néctares comerciales o jugos ...
## $ ...16 <chr> "v15", "Consume lácteos", "2 porciones al día", "2 porciones ...
## $ ...17 <chr> "v16", "¿Consume frutas?", "Menos de 1 porción día", "Menos d...
## $ ...18 <chr> "v17", "¿Consume verduras? (crudas o cocidas)", "1/2 porción ...
## $ ...19 <chr> "v18", "¿Consume pan? (hallulla o marraqueta/francés/batido/p...
## $ ...20 <chr> "v19", "¿Consume  galletas, queques, pasteles y/o dulces o eq...
## $ ...21 <chr> "v20", "Consume Huevos", "1 vez por semana", "1 vez por seman...
## $ ...22 <chr> "v21", "¿Consume vacuno, pollo, pavo o pescado?", "3 o más ve...
## $ ...23 <chr> "v22", "¿Consume legumbres? (porotos, lentejas, arvejas, garb...
## $ ...24 <chr> "v23", "¿Consume Café y/o Bebidas Energéticas?", "2 tazas y/o...
## $ ...25 <chr> "v24", "Consume bebidas alcohólicas", "Menos de 1 vaso al día...
## $ ...26 <chr> "v25", "Consume frituras", "2 porciones por semana", "2 porci...
## $ ...27 <chr> "v26", "Consume alimentos chatarra (pizza, completos, hamburg...
## $ ...28 <chr> "v27", "Usted toma desayuno", "Todos los días", "Todos los dí...
## $ ...29 <chr> "v28", "¿Ha variado el tamaño de la porción, en el consumo de...
## $ ...30 <chr> "v29", "¿Qué alimentos aumentaron su consumo?", NA, NA, NA, N...
## $ ...31 <chr> "v30", "¿Qué alimentos disminuyeron su consumo?", "Pan, Sopai...
## $ ...32 <chr> "v31", "¿Ha cambiado el tipo de alimentos que consume desde l...
## $ ...33 <chr> "v32", "¿Qué alimentos ha incorporado a su alimentación duran...
## $ ...34 <chr> "v33", "¿Desde la cuarentena, ud. ha percibido algún cambio e...
## $ ...35 <chr> "v34", "[Disfruto de mi programa favorito de radio o TV]", "D...
## $ ...36 <chr> "v35", "[Disfruto estar con mi familia o amigos]", "De acuerd...
## $ ...37 <chr> "v36", "[Disfruto mis pasatiempos]", "De acuerdo", "De acuerd...
## $ ...38 <chr> "v37", "[Disfruto de mi comida favorita]", "De acuerdo", "De ...
## $ ...39 <chr> "v38", "[Disfruto de un baño caliente o refrescante]", "De ac...
## $ ...40 <chr> "v39", "[Me causa placer percibir el aroma de las flores, de ...
## $ ...41 <chr> "v40", "[Disfruto ver a otras personas reír]", "De acuerdo", ...
## $ ...42 <chr> "v41", "[Disfruto verme bien cuando trato de cuidar mi aparie...
## $ ...43 <chr> "v42", "[Disfruto leer un libro, una revista o el diario]", "...
## $ ...44 <chr> "v43", "[Me resulta muy agradable el tomar una taza de café, ...
## $ ...45 <chr> "v44", "[Me produce placer el fijarme en pequeños detalles co...
## $ ...46 <chr> "v45", "[Disfruto un paisaje o una vista hermosa]", "Totalmen...
## $ ...47 <chr> "v46", "[Disfruto el poder ayudar a otros]", "De acuerdo", "D...
## $ ...48 <chr> "v47", "[Disfruto cuando otras personas me halagan]", "De acu...
## $ ...49 <chr> "v48", "[Torpe o paralizado]", "Nada, en absoluto", "Nada, en...
## $ ...50 <chr> "v49", ". [Acalorado]", "Levemente, no me molesta mucho", "Le...
## $ ...51 <chr> "v50", ". [Con temblor en las piernas]", "Nada, en absoluto",...
## $ ...52 <chr> "v51", ". [Incapaz de relajarse]", "Levemente, no me molesta ...
## $ ...53 <chr> "v52", ". [Con temor a que ocurra lo peor]", "Moderadamente f...
## $ ...54 <chr> "v53", ". [Mareado, o que se le va la cabeza]", "Nada, en abs...
## $ ...55 <chr> "v54", ". [Con latidos del corazón fuertes y acelerados]", "N...
## $ ...56 <chr> "v55", ". [Inestable]", "Nada, en absoluto", "Nada, en absolu...
## $ ...57 <chr> "v56", ". [Atemorizado o asustado]", "Nada, en absoluto", "Na...
## $ ...58 <chr> "v57", ". [Nervioso]", "Levemente, no me molesta mucho", "Lev...
## $ ...59 <chr> "v58", ". [Con sensación de bloqueo]", "Nada, en absoluto", "...
## $ ...60 <chr> "v59", ". [Con temblores en las manos]", "Nada, en absoluto",...
## $ ...61 <chr> "v60", ". [Inquieto, inseguro]", "Levemente, no me molesta mu...
## $ ...62 <chr> "v61", ". [Con miedo a perder el control]", "Nada, en absolut...
```

```
## $ ...63 <chr> "v62", ". [Con sensación de ahogo]", "Nada, en absoluto", "Na...
## $ ...64 <chr> "v63", ". [Con temor a morir]", "Nada, en absoluto", "Nada, e...
## $ ...65 <chr> "v64", ". [Con miedo]", "Moderadamente fue muy desagradable, ...
## $ ...66 <chr> "v65", ". [Con problemas digestivos]", "Nada, en absoluto", "...
## $ ...67 <chr> "v66", ". [Con desvanecimiento]", "Nada, en absoluto", "Nada,...
## $ ...68 <chr> "v67", ". [Con enrojecimiento facial]", "Nada, en absoluto", ...
## $ ...69 <chr> "v68", ". [Con sudores fríos o calientes]", "Nada, en absolut...
## $ ...70 <chr> "v69", "¿Desea invitar a un familiar o conocido a contestar e...
## $ ...71 <chr> "v70", "Email de sus familiares o de personas conocidas", NA,...
```

Removing the first rows, because they do not have observations

```
dat <- covid_base_Chile[-1:-2, ]
glimpse(dat)
```

```
## Rows: 1,793
## Columns: 71
## $ ...1  <chr> "43924.459642152782", "43924.459738993057", "43924.4619147916...
## $ ...2  <chr> "Si", "Si", "Si", "Si", "Si", "Si", "Si", "Si", "Si", "Si", "...
## $ ...3  <chr> "Voluntaria", "Voluntaria", "Voluntaria", "Voluntaria", "Volu...
## $ ...4  <chr> "Más de 1 semana", "Más de 1 semana", "Más de 2 semanas", "Má...
## $ ...5  <chr> "No", "No", "No", "No", "No", "No", "No", "No", "No", "No", N...
## $ ...6  <chr> "No", "No", "No", "No", "No", "No", "No", "No", "No", "No", N...
## $ ...7  <chr> "Masculino", "Masculino", "Masculino", "Masculino", "Femenino...
## $ ...8  <chr> "23", "23", "51", "23", "41", "44", "52", "45", "35", "45", N...
## $ ...9  <chr> "Chilena", "Chilena", "Chilena", "Chilena", "Chilena", "Chile...
## $ ...10 <chr> "Universitaria  o Técnica Completa", "Universitaria  o Técnic...
## $ ...11 <chr> "Trabajador independiente", "Trabajador independiente", "Trab...
## $ ...12 <chr> "VIII región del Bio-bio", "VIII región del Bio-bio", "XIII R...
## $ ...13 <chr> ">= 4", ">= 4", "2", ">= 4", ">= 4", "2", "2", "2", "2", ">= ...
## $ ...14 <chr> "Media baja", "Media baja", "Bajo", "Media baja", "Media alta...
## $ ...15 <chr> "1 vaso al día", "1 vaso al día", "No consume", "1 vaso al dí...
## $ ...16 <chr> "2 porciones al día", "2 porciones al día", "3 porciones al d...
## $ ...17 <chr> "Menos de 1 porción día", "Menos de 1 porción día", "3 porcio...
## $ ...18 <chr> "1/2 porción al día", "1/2 porción al día", "2 o más porcione...
## $ ...19 <chr> "2 porciones al día", "2 porciones al día", "2 porciones al d...
## $ ...20 <chr> "1 porción al día", "1 porción al día", "Menos de 1 vez al dí...
## $ ...21 <chr> "1 vez por semana", "1 vez por semana", "3 o más veces por se...
## $ ...22 <chr> "3 o más veces por semana", "3 o más veces por semana", "3 o ...
## $ ...23 <chr> "Menos de 1 vez por semana", "Menos de 1 vez por semana", "3 ...
## $ ...24 <chr> "2 tazas y/o vasos al día", "2 tazas y/o vasos al día", "1 ta...
## $ ...25 <chr> "Menos de 1 vaso al día ocasionalmente", "Menos de 1 vaso al ...
## $ ...26 <chr> "2 porciones por semana", "2 porciones por semana", "1 porció...
## $ ...27 <chr> "1 porción al día", "1 porción al día", "Menos de 1 vez al dí...
## $ ...28 <chr> "Todos los días", "Todos los días", "Todos los días", "Todos ...
## $ ...29 <chr> "Sí, disminuyó", "Sí, disminuyó", "Sí, disminuyó", "Sí, dismi...
## $ ...30 <chr> NA, NA, NA, NA, NA, "Chocolates, Pasteles, berlines, bollería...
## $ ...31 <chr> "Pan, Sopaipillas, Carnes, pescados y mariscos, Dulces, galle...
## $ ...32 <chr> "SÍ", "SÍ", "SÍ", "SÍ", "SÍ", "SÍ", "SÍ", "SÍ", "NO", "SÍ", N...
## $ ...33 <chr> "Cereales", "Cereales", "pan hecho en casa", "Cereales", "Nad...
## $ ...34 <chr> "Sí, disminuyó", "Sí, disminuyó", "Sí, aumentó", "Sí, disminu...
## $ ...35 <chr> "De acuerdo", "De acuerdo", "De acuerdo", "De acuerdo", "De a...
## $ ...36 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
```

```
## $ ...37 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...38 <chr> "De acuerdo", "De acuerdo", "De acuerdo", "De acuerdo", "De a...
## $ ...39 <chr> "De acuerdo", "De acuerdo", "En desacuerdo", "De acuerdo", "D...
## $ ...40 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...41 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...42 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...43 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...44 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...45 <chr> "En desacuerdo", "En desacuerdo", "Totalmente de acuerdo", "D...
## $ ...46 <chr> "Totalmente de acuerdo", "Totalmente de acuerdo", "Totalmente...
## $ ...47 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...48 <chr> "De acuerdo", "De acuerdo", "Totalmente de acuerdo", "De acue...
## $ ...49 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...50 <chr> "Levemente, no me molesta mucho", "Levemente, no me molesta m...
## $ ...51 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...52 <chr> "Levemente, no me molesta mucho", "Levemente, no me molesta m...
## $ ...53 <chr> "Moderadamente fue muy desagradable, pero podía soportarlo", ...
## $ ...54 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...55 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...56 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...57 <chr> "Nada, en absoluto", "Nada, en absoluto", "Severamente, casi ...
## $ ...58 <chr> "Levemente, no me molesta mucho", "Levemente, no me molesta m...
## $ ...59 <chr> "Nada, en absoluto", "Nada, en absoluto", "Moderadamente fue ...
## $ ...60 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...61 <chr> "Levemente, no me molesta mucho", "Levemente, no me molesta m...
## $ ...62 <chr> "Nada, en absoluto", "Nada, en absoluto", "Severamente, casi ...
## $ ...63 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...64 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...65 <chr> "Moderadamente fue muy desagradable, pero podía soportarlo", ...
## $ ...66 <chr> "Nada, en absoluto", "Nada, en absoluto", "Severamente, casi ...
## $ ...67 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...68 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...69 <chr> "Nada, en absoluto", "Nada, en absoluto", "Nada, en absoluto"...
## $ ...70 <chr> "No", "No", "Si", "No", "Si", "Si", "No", "No", "Si", "No", N...
## $ ...71 <chr> NA, NA, "ps.juanpablo@gmail.com", NA, "Francisco.orellana.veg...
```

Recoding Variables ————————————————————————————————

Psychologicals variables

BAI Anxiety

BAI anxiety 49 to 69 in dat

Create recode function to BAI (Beck anxiety inventory)

```
rec_bai <- function(x){
  dplyr::recode(x,
        "Nada, en absoluto"                                    = 0,
        "Levemente, no me molesta mucho"                       = 1,
        "Moderadamente fue muy desagradable, pero podía soportarlo" = 2,
        "Severamente, casi no podía soportarlo"                = 3,
  )
}
```

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Select BAI items and apply rec_bai function

```
b_items <- sapply(dat %>% select(...49:...69), rec_bai)
```

Move recoded bai items to full data.

```
bdat <- cbind.data.frame(dat, b_items)
```

Put name to recoded bai items

```
names(bdat)[72:92] <- c('bai1', 'bai2', 'bai3', 'bai4', 'bai5', 'bai6',
                        'bai7', 'bai8', 'bai9', 'bai10', 'bai11', 'bai12',
                        'bai13','bai14', 'bai15', 'bai16', 'bai17',
                        'bai18', 'bai19','bai20', 'bai21')
```

Create list of all items

```
bai_items <- c('bai1', 'bai2', 'bai3', 'bai4', 'bai5', 'bai6',
               'bai7', 'bai8', 'bai9', 'bai10', 'bai11', 'bai12', 'bai13',
               'bai14', 'bai15', 'bai16', 'bai17', 'bai18', 'bai19',
               'bai20', 'bai21')
```

Review coding is fine, comparing with original variable

```
table(bdat$...49, bdat$bai1)
```

```
##
##                                                          0   1   2   3
##   Levemente, no me molesta mucho                         0 546   0   0
##   Moderadamente fue muy desagradable, pero podía soportarlo   0   0 325   0
##   Nada, en absoluto                                      822   0   0   0
##   Severamente, casi no podía soportarlo                  0   0   0  33
```

Calculate total score

```
bdat$bai_total <- rowSums(bdat[,bai_items], na.rm = TRUE)
```

SHAPS Anhedonia

SHAPS anhedonia columns 35 to 48 in dat

recode function to SHAPS

```
rec_sh <- function(x){
  dplyr::recode(x,
        "Totalmente en desacuerdo" = 1,
        "En desacuerdo"            = 1,
        "De acuerdo"               = 0,
        "Totalmente de acuerdo"    = 0,
  )}
```

Select SHAPS items and apply rec_sh function

```
sh_items <- sapply(dat %>% select(...35:...48), rec_sh)
```

Move recoded shaps items to full data.

```
bdat <- cbind.data.frame(bdat, sh_items)
```

Put names. . .

```
names(bdat)[94:107] <- c('sh1',  'sh2',
                         'sh3', 'sh4', 'sh5', 'sh6', 'sh7',
                         'sh8', 'sh9', 'sh10','sh11', 'sh12', 'sh13',
                         'sh14')
```

Create list of SHAPS items

```
sh_items <- c('sh1',  'sh2',
              'sh3', 'sh4', 'sh5', 'sh6', 'sh7',
              'sh8', 'sh9', 'sh10','sh11', 'sh12', 'sh13',
              'sh14')
```

Comparing old items with recoded

```
table(bdat$...35, bdat$sh1)
```

```
##
##                             0   1
##   De acuerdo              780   0
##   En desacuerdo             0 253
##   Totalmente de acuerdo   538   0
##   Totalmente en desacuerdo  0 155
```

Calculate SHAPS tota score

```
bdat$sh_total <- rowSums(bdat[,sh_items], na.rm =TRUE)
```

Items are ok recoded. Now to unify data frame name again.

```
dat <- bdat
```

transform psychological variables to categories

```
library(forcats)
```

BAI categories

```
dat <- dat %>%
  mutate(bai_cat = ifelse(bai_total < 8, "Minimal",
                     ifelse(bai_total %in% 8:15, "Mild",
                          ifelse(bai_total %in% 16:25, "Moderate",
                                  "Severe"))))
```

order levels

```r
dat$bai_cat <- factor(dat$bai_cat,
                      levels = c("Minimal", "Mild","Moderate","Severe"))
```

SHAPS categories

```r
dat <- dat %>%
  mutate(sh_cat = ifelse(sh_total >= 3, "Yes", "No"))
```

order levels

```r
dat$sh_cat <- factor(dat$sh_cat,
                     levels = c("No", "Yes"))
```

Food variables ————————————————————————————

Sweet drink

```r
dat$sweet_drink <- factor(x = dat$...15)
dat$sweet_drink <- dplyr::recode(dat$sweet_drink,
                                 "No consume" = "0",
                                 "Menos de 1 vaso al día ocasionalmente" = "<1",
                                 "1 vaso al día" = "1",
                                 "2 vasos al día" = "2",
                                 "3 o más vasos al día" = ">=3"
)
```

Pastry

```r
dat$pastry <- factor(x = dat$...20)
dat$pastry <- dplyr::recode(dat$pastry,
                    "No consume" = "0",
                    "Menos de 1 vez al día ocasionalmente" = "< 1",
                    "1 porción al día" = "1",
                    "2 porciones al día" = "2",
                    "3 o más porciones al día" = "=> 3"
)

dat$pastry <- factor(dat$pastry,
                    levels = c("0", "< 1", "1", "2", "=> 3"))

dat <- dat %>%
  mutate(pastry_dic = fct_collapse(pastry,
                                   "< 1" = c("0", "< 1"),
                                   "1"   =  "1",
                                   ">=2" = c( "2", "=> 3"))
  )
```

Fried food

```r
dat$frit <- factor(x= dat$...26)
dat$frit <- dplyr::recode(dat$frit,
                    "No consume"  =  "0",
                    "Ocasionalmente (2 veces al mes)" = "< 1",
                    "1 porción por semana" = "1",
                    "2 porciones por semana" = "2",
                    "3 o más porciones por semana" = "=> 3"
)


dat$frit <- factor(dat$frit,
                    levels = c("0", "< 1", "1", "2", "=> 3"))

dat <- dat %>%
  mutate(frit_dic = fct_collapse(frit,
                            "<1" = c("0", "< 1"),
                            "1"  =  "1",
                            ">=2" = c( "2", "=> 3"))
          )
```

Fast Food

```r
dat$fast_food <- factor(x= dat$...27)
dat$fast_food <- dplyr::recode(dat$fast_food,
                        "No consume" = "0",
                        "Menos de 1 vez al día ocasionalmente" = "< 1",
                        "1 porción al día" = "1",
                        "2 porciones al día" = "2",
                        "3 o más porciones al día" = "=> 3"
)

dat$fast_food <- factor(dat$fast_food,
                        levels = c("0", "< 1", "1", "2", "=> 3"))
```

Food Size serving

```r
dat$size_food <- factor(x= dat$...29)

dat$size_food <- dplyr::recode(dat$size_food,
                        'Sí, disminuyó' = 'Decreased',
                        'Si, aumentó' = 'Increased',
                        'Se mantiene igual' = 'Same')
```

Transform size variable to binary outcome

```r
dat$size <- factor(dat$size_food,
                    levels = c("Same", "Increased"))

dat$inc.size <- (inc.size = dat$size == "Increased")
```

Weight perceived

```r
dat$weigth_reported <- factor(x=dat$...34)

dat$weigth_reported <- dplyr::recode(dat$weigth_reported,
                                     'Sí, disminuyó' = 'Decreased',
                                     'Sí, aumentó' = 'Increased',
                                     'No. Se mantuvo igual' = 'Same')
```

Tranform to binary outcome

```r
dat$weigth <- factor(dat$weigth_reported,
                     levels = c("Same", "Increased"))

dat$inc.weigth <- (inc.weigth = dat$weigth_reported == "Increased")
```

Sociodemographics

Lockdown

```r
dat$Lockdown_time <- factor( x = dat$...4)
```

Gender

```r
dat$gender <- factor( x = dat$...7, exclude = "Otro")
dat$gender <- factor( x = dat$gender,
                      levels = c("Femenino", "Masculino"),
                      labels = c("Femenine", "Masculine"))
```

Age

```r
dat$age <- as.numeric(dat$...8)
```

Age groups

```r
dat <- dat %>%
  mutate(age_group = ifelse(age %in% 18:29, "18 to 29",
                            ifelse(age %in% 30:59, "30 to 59",
                                   "60 or older")))
```

NSE

```r
dat$NSE <- factor(x = dat$...14)
dat$NSE <- dplyr::recode(dat$NSE,
                         'Bajo' = 'Low',
                         'Media baja' = 'Middle-low',
                         'Media' = 'Middle',
                         'Media alta' = 'Middle-high',
                         'Alta' = 'High')

dat$NSE <- factor(dat$NSE,
                  levels = c('Low',
```

```
                           'Middle-low',
                           'Middle',
                           'Middle-high',
                           'High'))
```

Accept participate

```
dat$accept <- as.factor(dat$...2)
table(dat$accept)
```

```
##
##   No   Si
##   15 1726
```

Filtering base and drop unused variables ——————————————

```
dat <- dat %>%
        filter(age > 17,
               age != " ",
               accept == "Si",
               gender != " ") %>%
        select(-starts_with("..."))

#eliminate duplicate cases by error in google forms

dat <- dat %>% distinct()

glimpse(dat)
```

```
## Rows: 1,696
## Columns: 57
## $ bai1        <dbl> 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 2, 0, ...
## $ bai2        <dbl> 1, 0, 0, 0, 1, 1, 1, 0, 0, 1, 3, 2, 1, 0, 0, 2, 0, ...
## $ bai3        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 0, 0, 0, 0, 0, ...
## $ bai4        <dbl> 1, 1, 1, 0, 0, 0, 3, 1, 2, 2, 1, 3, 0, 2, 1, 2, 0, ...
## $ bai5        <dbl> 2, 2, 2, 1, 2, 2, 3, 1, 3, 2, 2, 1, 1, 1, 1, 2, 1, ...
## $ bai6        <dbl> 0, 0, 0, 0, 1, 0, 0, 0, 2, 2, 2, 2, 2, 0, 0, 0, 0, ...
## $ bai7        <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 3, 2, 2, 1, 0, 0, 0, 0, 1, ...
## $ bai8        <dbl> 0, 0, 0, 0, 0, 1, 0, 1, 2, 1, 2, 2, 1, 0, 1, 1, 0, ...
## $ bai9        <dbl> 0, 3, 0, 0, 1, 1, 3, 0, 3, 0, 1, 1, 0, 0, 0, 1, 1, ...
## $ bai10       <dbl> 1, 2, 0, 1, 2, 0, 3, 1, 3, 2, 2, 2, 1, 1, 2, 1, 1, ...
## $ bai11       <dbl> 0, 2, 0, 0, 2, 0, 0, 0, 3, 0, 1, 0, 0, 0, 0, 1, 1, ...
## $ bai12       <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 2, 0, 0, 0, 0, 0, 1, ...
## $ bai13       <dbl> 1, 3, 0, 1, 1, 0, 3, 1, 1, 1, 1, 1, 1, 0, 0, 0, 1, ...
## $ bai14       <dbl> 0, 3, 0, 1, 1, 0, 3, 0, 3, 1, 0, 1, 1, 0, 0, 1, 0, ...
## $ bai15       <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 2, 1, 0, 0, 0, 1, 1, ...
## $ bai16       <dbl> 0, 0, 2, 0, 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 1, 0, ...
## $ bai17       <dbl> 2, 3, 2, 1, 1, 0, 3, 0, 3, 1, 2, 0, 1, 0, 0, 1, 1, ...
```

```
## $ bai18          <dbl> 0, 3, 0, 1, 2, 0, 0, 0, 3, 1, 1, 3, 0, 0, 0, 0, 0, ...
## $ bai19          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, ...
## $ bai20          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 2, 1, 1, 0, 3, 0, 0, ...
## $ bai21          <dbl> 0, 0, 0, 0, 0, 0, 0, 0, 2, 0, 3, 0, 1, 0, 0, 0, 0, ...
## $ bai_total      <dbl> 8, 22, 7, 6, 15, 5, 22, 5, 40, 17, 33, 23, 11, 4, 8...
## $ sh1            <dbl> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh2            <dbl> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, ...
## $ sh3            <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh4            <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, ...
## $ sh5            <dbl> 0, 1, 0, 0, 1, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh6            <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh7            <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh8            <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh9            <dbl> 0, 0, 0, 0, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh10           <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh11           <dbl> 1, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh12           <dbl> 0, 0, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh13           <dbl> 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 1, 0, 0, 0, 0, 0, ...
## $ sh14           <dbl> 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, ...
## $ sh_total       <dbl> 1, 1, 0, 0, 9, 0, 9, 14, 0, 2, 0, 1, 0, 0, 0, 2, 0,...
## $ bai_cat        <fct> Mild, Moderate, Minimal, Minimal, Mild, Minimal, Mo...
## $ sh_cat         <fct> No, No, No, No, Yes, No, Yes, Yes, No, No, No, No, ...
## $ sweet_drink    <fct> 1, 0, 1, 2, <1, 0, 0, <1, <1, 0, 1, 0, 1, <1, 0, <1...
## $ pastry         <fct> 1, < 1, 1, < 1, 1, 1, 0, 0, < 1, < 1, 2, < 1, 1, 0,...
## $ pastry_dic     <fct> 1, < 1, 1, < 1, 1, 1, < 1, < 1, < 1, < 1, >=2, < 1,...
## $ frit           <fct> 2, 1, < 1, < 1, 1, 0, < 1, < 1, 0, 1, 2, < 1, => 3,...
## $ frit_dic       <fct> >=2, 1, <1, <1, 1, <1, <1, <1, <1, 1, >=2, <1, >=2,...
## $ fast_food      <fct> 1, < 1, < 1, < 1, < 1, 0, 0, < 1, 0, < 1, 2, < 1, 1...
## $ size_food      <fct> Decreased, Decreased, Decreased, Same, Increased, S...
## $ size           <fct> NA, NA, NA, Same, Increased, Same, Increased, Same,...
## $ inc.size       <lgl> NA, NA, NA, FALSE, TRUE, FALSE, TRUE, FALSE, FALSE,...
## $ weigth_reported <fct> Decreased, Increased, Decreased, Same, Increased, I...
## $ weigth         <fct> NA, Increased, NA, Same, Increased, Increased, Incr...
## $ inc.weigth     <lgl> FALSE, TRUE, FALSE, FALSE, TRUE, TRUE, TRUE, TRUE, ...
## $ Lockdown_time  <fct> Más de 1 semana, Más de 2 semanas, Más de 1 semana,...
## $ gender         <fct> Masculine, Masculine, Masculine, Femenine, Femenine...
## $ age            <dbl> 23, 51, 23, 41, 44, 52, 45, 35, 45, 34, 22, 42, 63,...
## $ age_group      <chr> "18 to 29", "30 to 59", "18 to 29", "30 to 59", "30...
## $ NSE            <fct> Middle-low, Low, Middle-low, Middle-high, Middle, M...
## $ accept         <fct> Si, Si, Si, Si, Si, Si, Si, Si, Si, Si, Si, Si, Si,...
```

Exploratory analysis

Explore Age groups

```
dat %>%
  group_by(age_group) %>%
  summarise(n = n()) %>%
  mutate(freq = n / sum(n))
```

```
## # A tibble: 3 x 3
##   age_group       n   freq
##   <chr>       <int>  <dbl>
```

```
## 1 18 to 29        758 0.447
## 2 30 to 59        886 0.522
## 3 60 or older      52 0.0307
```

Psychologycal variables

by NSE

```r
dat %>%
  group_by(NSE) %>%
  summarise(mean(age),
            sd(age),
            mean(bai_total),
            sd(bai_total),
            mean(sh_total),
            sd(sh_total),
            n()) %>%
  ungroup()
```

```
## # A tibble: 5 x 8
##   NSE   `mean(age)` `sd(age)` `mean(bai_total~ `sd(bai_total)` `mean(sh_total)`
##   <fct>       <dbl>     <dbl>            <dbl>           <dbl>            <dbl>
## 1 Low          29.6      11.1             24.6            14.2             4.2
## 2 Midd~        31.0      10.7             18.8            13.0            3.23
## 3 Midd~        32.9      9.83             16.9            11.7            2.54
## 4 Midd~        35.2      10.4             14.4            11.4            2.15
## 5 High         39.4      9.77             12.3            9.35            2.32
## # ... with 2 more variables: `sd(sh_total)` <dbl>, `n()` <int>
```

by Lockdown time

```r
dat %>%
  group_by(Lockdown_time) %>%
   summarise(mean(age),
            sd(age),
            mean(bai_total),
            sd(bai_total),
            mean(sh_total),
            sd(sh_total),
            n()) %>%
  ungroup()
```

```
## # A tibble: 5 x 8
##   Lockdown_time `mean(age)` `sd(age)` `mean(bai_total~ `sd(bai_total)`
##   <fct>               <dbl>     <dbl>            <dbl>           <dbl>
## 1 Más de 1 sem~        32.9      9.20             16.4            11.6
## 2 Más de 2 sem~        34.9      10.8             16.1            11.7
## 3 Más de 3 sem~        33.8      10.3             16.8            11.7
## 4 Mayor a 4 se~        31.1      10.2             17.9            13.0
## 5 No ha restri~        30.8      8.32             16.0            11.9
## # ... with 3 more variables: `mean(sh_total)` <dbl>, `sd(sh_total)` <dbl>,
## #   `n()` <int>
```

Table BAI categories by lockdown time, proportions and chi-square

```
prop.table(table(dat$bai_cat))
```

```
##
##   Minimal      Mild  Moderate     Severe
## 0.2535377 0.2836085 0.2358491 0.2270047
```

```
table(dat$bai_cat, dat$Lockdown_time)
```

```
##
##            Más de 1 semana Más de 2 semanas Más de 3 semanas Mayor a 4 semanas
##   Minimal               37               99              157               112
##   Mild                  50              105              198               107
##   Moderate              34               86              157                99
##   Severe                31               76              150               111
##
##            No ha restringido el contacto social
##   Minimal                                     25
##   Mild                                        21
##   Moderate                                    24
##   Severe                                      17
```

```
prop.table(table(dat$bai_cat, dat$Lockdown_time),2)
```

```
##
##            Más de 1 semana Más de 2 semanas Más de 3 semanas Mayor a 4 semanas
##   Minimal        0.2434211        0.2704918        0.2371601        0.2610723
##   Mild           0.3289474        0.2868852        0.2990937        0.2494172
##   Moderate       0.2236842        0.2349727        0.2371601        0.2307692
##   Severe         0.2039474        0.2076503        0.2265861        0.2587413
##
##            No ha restringido el contacto social
##   Minimal                           0.2873563
##   Mild                              0.2413793
##   Moderate                          0.2758621
##   Severe                            0.1954023
```

```
chisq.test(table(dat$bai_cat, dat$Lockdown_time))
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(dat$bai_cat, dat$Lockdown_time)
## X-squared = 9.6414, df = 12, p-value = 0.6474
```

Table SHAPS categories by lockdown time, proportions and chi-square

```
table(dat$sh_cat, dat$Lockdown_time)
```

```
##
##        Más de 1 semana Más de 2 semanas Más de 3 semanas Mayor a 4 semanas
##   No                94              239              421              288
##   Yes               58              127              241              141
##
##        No ha restringido el contacto social
##   No                                        57
##   Yes                                       30
```

```
prop.table(table(dat$sh_cat, dat$Lockdown_time),2)
```

```
##
##        Más de 1 semana Más de 2 semanas Más de 3 semanas Mayor a 4 semanas
##   No         0.6184211        0.6530055        0.6359517        0.6713287
##   Yes        0.3815789        0.3469945        0.3640483        0.3286713
##
##        No ha restringido el contacto social
##   No                                 0.6551724
##   Yes                                0.3448276
```

```
chisq.test(table(dat$sh_cat, dat$Lockdown_time))
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(dat$sh_cat, dat$Lockdown_time)
## X-squared = 2.0877, df = 4, p-value = 0.7196
```

Food by Psychologycal variables bivariate analysis

```
table(dat$pastry, dat$bai_cat)
```

```
##
##        Minimal Mild Moderate Severe
##   0         72   69       52     48
##   < 1      245  226      187    172
##   1         72  121       99     90
##   2         29   52       46     51
##   => 3      12   13       16     24
```

```
prop.table(table(dat$pastry, dat$bai_cat),2)
```

```
##
##            Minimal       Mild   Moderate     Severe
##   0     0.16744186 0.14345114 0.13000000 0.12467532
##   < 1   0.56976744 0.46985447 0.46750000 0.44675325
##   1     0.16744186 0.25155925 0.24750000 0.23376623
##   2     0.06744186 0.10810811 0.11500000 0.13246753
##   => 3  0.02790698 0.02702703 0.04000000 0.06233766
```

```r
chisq.test(table(dat$pastry, dat$bai_cat))
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(dat$pastry, dat$bai_cat)
## X-squared = 37.533, df = 12, p-value = 0.000183
```

```r
table(dat$pastry, dat$bai_cat)
```

```
##
##         Minimal Mild Moderate Severe
##   0          72   69       52     48
##   < 1       245  226      187    172
##   1          72  121       99     90
##   2          29   52       46     51
##   => 3       12   13       16     24
```

```r
prop.table(table(dat$pastry, dat$bai_cat),2)
```

```
##
##            Minimal       Mild   Moderate     Severe
##   0     0.16744186 0.14345114 0.13000000 0.12467532
##   < 1   0.56976744 0.46985447 0.46750000 0.44675325
##   1     0.16744186 0.25155925 0.24750000 0.23376623
##   2     0.06744186 0.10810811 0.11500000 0.13246753
##   => 3  0.02790698 0.02702703 0.04000000 0.06233766
```

```r
chisq.test(table(dat$pastry, dat$bai_cat))
```

```
##
##  Pearson's Chi-squared test
##
## data:  table(dat$pastry, dat$bai_cat)
## X-squared = 37.533, df = 12, p-value = 0.000183
```

```r
table(dat$sweet_drink, dat$bai_cat)
```

```
##
##         Minimal Mild Moderate Severe
##   1          46   58       35     37
##   2          36   47       39     40
##   >=3        19   28       28     41
##   <1        136  151      139    137
##   0         193  197      159    130
```

```r
prop.table(table(dat$sweet_drink, dat$bai_cat),2)
```

```
##
##          Minimal       Mild   Moderate     Severe
##   1   0.10697674 0.12058212 0.08750000 0.09610390
##   2   0.08372093 0.09771310 0.09750000 0.10389610
##   >=3 0.04418605 0.05821206 0.07000000 0.10649351
##   <1  0.31627907 0.31392931 0.34750000 0.35584416
##   0   0.44883721 0.40956341 0.39750000 0.33766234
```

chisq.test(**table**(dat**$**sweet_drink, dat**$**bai_cat))

```
##
##  Pearson's Chi-squared test
##
## data:  table(dat$sweet_drink, dat$bai_cat)
## X-squared = 24.297, df = 12, p-value = 0.01853
```

table(dat**$**sweet_drink, dat**$**sh_cat)

```
##
##        No Yes
##   1   113  63
##   2   103  59
##   >=3  65  51
##   <1  364 199
##   0   454 225
```

prop.table(**table**(dat**$**sweet_drink, dat**$**sh_cat),2)

```
##
##             No        Yes
##   1   0.10282075 0.10552764
##   2   0.09372157 0.09882747
##   >=3 0.05914468 0.08542714
##   <1  0.33121019 0.33333333
##   0   0.41310282 0.37688442
```

chisq.test(**table**(dat**$**sweet_drink, dat**$**sh_cat))

```
##
##  Pearson's Chi-squared test
##
## data:  table(dat$sweet_drink, dat$sh_cat)
## X-squared = 5.3127, df = 4, p-value = 0.2567
```

table(dat**$**weigth_reported, dat**$**Lockdown_time)

```
##
##             Más de 1 semana Más de 2 semanas Más de 3 semanas Mayor a 4 semanas
##   Same                   72              165              282               156
##   Increased              61              153              287               212
```

```
##    Decreased                         19              48              93              61
##
##              No ha restringido el contacto social
##    Same                                      33
##    Increased                                 46
##    Decreased                                  8
```

```r
prop.table(table(dat$weigth_reported, dat$Lockdown_time),2)
```

```
##
##              Más de 1 semana Más de 2 semanas Más de 3 semanas Mayor a 4 semanas
##    Same           0.47368421      0.45081967       0.42598187        0.36363636
##    Increased      0.40131579      0.41803279       0.43353474        0.49417249
##    Decreased      0.12500000      0.13114754       0.14048338        0.14219114
##
##              No ha restringido el contacto social
##    Same                                0.37931034
##    Increased                           0.52873563
##    Decreased                           0.09195402
```

```r
chisq.test(table(dat$weigth_reported, dat$Lockdown_time))
```

```
##
##   Pearson's Chi-squared test
##
## data:  table(dat$weigth_reported, dat$Lockdown_time)
## X-squared = 12.275, df = 8, p-value = 0.1394
```

PLOTS ——————————————————————————————————-

Load packages to do plots

```r
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.6.3
```

```r
library(finalfit)
```

```
## Warning: package 'finalfit' was built under R version 3.6.3
```

```r
library(extrafont)
```

```
## Warning: package 'extrafont' was built under R version 3.6.2
```

```r
library(patchwork)
```

```
## Warning: package 'patchwork' was built under R version 3.6.3
```

```
library(jtools)
```

```
## Warning: package 'jtools' was built under R version 3.6.3
```

Define theme

```
my_theme <- function(){
  theme(
    text = element_text(family = "Bookman Old Style"),
    strip.background = element_rect(fill = "gray60",
                                    color = "gray95"),
    panel.background = element_blank(),
    strip.text = element_text(color = "white"),
    legend.title=element_text(size=9),
    legend.text=element_text(size=8),
  )
}
```
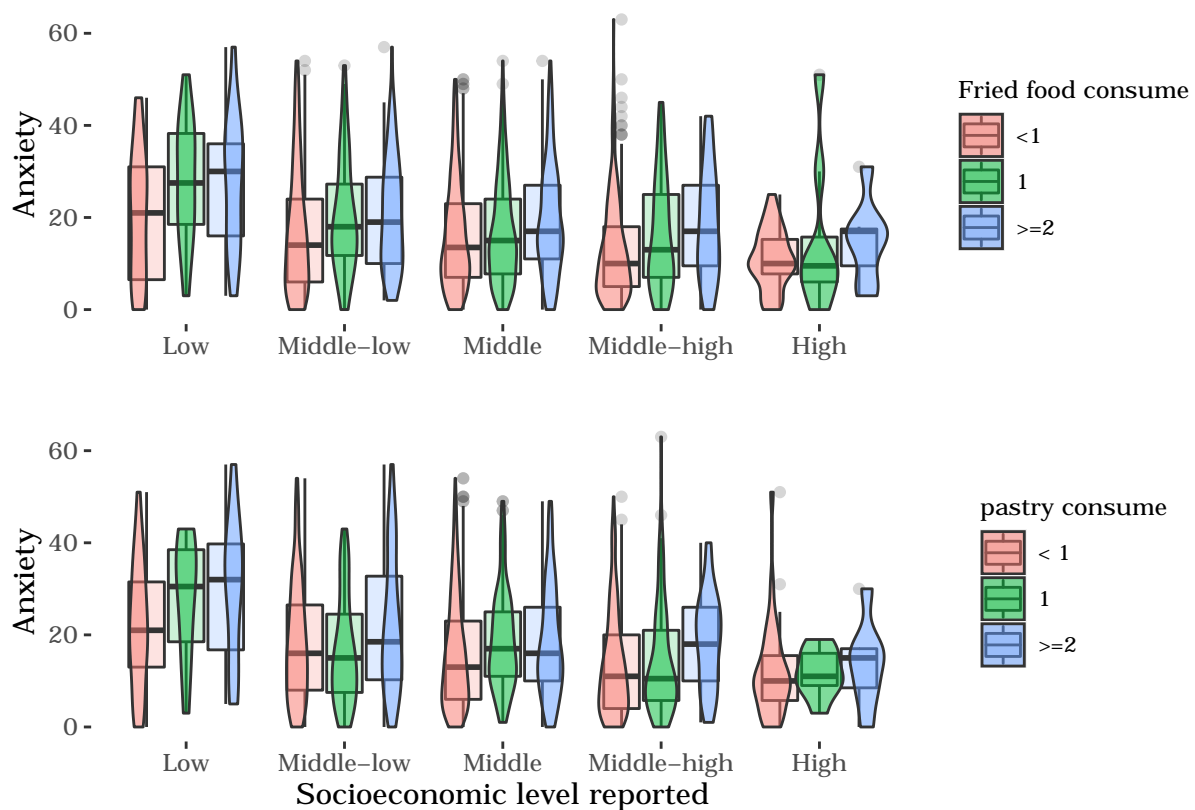
Box Plots

```
box1 <- ggplot(dat, aes(NSE, bai_total, fill = frit_dic))+
  geom_boxplot(alpha = 0.2)+
  geom_violin(alpha = 0.5)+
  labs(y = "Anxiety",
       x = " ",
       fill = "Fried food consume")+
  my_theme()
```

```
box2 <- ggplot(dat, aes(NSE, bai_total, fill = pastry_dic))+
  geom_boxplot(alpha = 0.2)+
  geom_violin(alpha = 0.5)+
  labs(y = "Anxiety",
       x = "Socioeconomic level reported",
       fill = "pastry consume")+
  my_theme()
```

Paste boxplots

```
box1 / box2
```


OR PLOT ————————————————————————————————————

Put labs in variable to do OR plots

```
library(expss)
```

```
## Warning: package 'expss' was built under R version 3.6.3
```

```
var_lab(dat$gender) <- "Gender"
var_lab(dat$weigth_reported) <- "Body Weight"
var_lab(dat$size_food) <- "Food serving size"
var_lab(dat$sweet_drink) <- "Sugar-sweetened beverage"
var_lab(dat$pastry_dic) <- "Pastry"
var_lab(dat$frit_dic) <- "Fried Food"
var_lab(dat$fast_food) <- "Fast/Junk Food"
var_lab(dat$bai_cat) <- "Anxiety (BAI)"
var_lab(dat$sh_cat) <- "Anhedonia (SHAPS"
var_lab(dat$NSE) <- "Socieconomic Status"
```

or__plot1 Figure 3

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```r
explanatory = c("gender", "NSE", "pastry_dic", "sweet_drink", "frit_dic","fast_food",
                "weigth_reported",
                "bai_cat", "sh_cat")

dependent = "inc.size"
dat %>%
  or_plot(dependent, explanatory,
          table_text_size=3, title_text_size=12,
          dependent_label = "Dependent Variable: Increased food serving size",
          suffix = " ",
          plot_opts=list(xlab("OR, 95% CI"),
                         theme(axis.title = element_text(size=12),
                               axis.text.x = element_text(size=8)
                         )
          )
  )
```

```
## Warning: Removed 9 rows containing missing values (geom_errorbarh).
```


Dependent Variable: Increased food serving size

Gender	Femenine	–
	Masculine	0.85 (0.61–1.18, p=0.332)
Socieconomic Status	Low	–
	Middle–low	0.70 (0.33–1.47, p=0.350)
	Middle	0.60 (0.29–1.22, p=0.164)
	Middle–high	0.56 (0.26–1.16, p=0.123)
	High	0.36 (0.13–0.99, p=0.052)
Pastry	< 1	–
	1	1.47 (1.10–1.96, p=0.008)
	>=2	1.86 (1.31–2.67, p=0.001)
Sugar–sweetened beverage	1	–
	2	0.78 (0.46–1.35, p=0.379)
	>=3	0.67 (0.37–1.21, p=0.185)
	<1	0.99 (0.65–1.52, p=0.973)
	0	0.98 (0.64–1.51, p=0.940)
Fried Food	<1	–
	1	1.22 (0.90–1.66, p=0.198)
	>=2	1.24 (0.88–1.77, p=0.223)
Fast/Junk Food	0	–
	< 1	1.12 (0.82–1.52, p=0.476)
	1	1.02 (0.58–1.78, p=0.954)
	2	1.06 (0.37–3.39, p=0.913)
	=> 3	1.56 (0.48–5.72, p=0.471)
Body Weight	Same	–
	Increased	5.31 (4.14–6.85, p<0.001)
	Decreased	0.59 (0.33–1.01, p=0.064)
Anxiety (BAI)	Minimal	–
	Mild	1.54 (1.10–2.16, p=0.011)
	Moderate	2.07 (1.46–2.95, p<0.001)
	Severe	2.21 (1.53–3.19, p<0.001)
Anhedonia (SHAPS	No	–
	Yes	1.39 (1.08–1.79, p=0.010)

OR, 95% CI
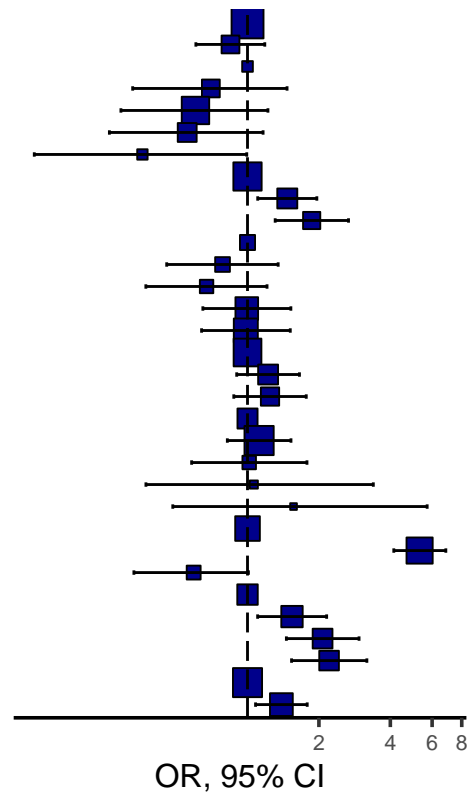
summary logistic model or_plot1

```r
mod1 <- glm(inc.size ~ gender +  NSE +  pastry_dic +  sweet_drink +  frit_dic + fast_food +
            weigth_reported + bai_cat +  sh_cat, dat, family = "binomial")

summary(mod1)
```

```
## 
## Call:
## glm(formula = inc.size ~ gender + NSE + pastry_dic + sweet_drink +
##     frit_dic + fast_food + weigth_reported + bai_cat + sh_cat,
##     family = "binomial", data = dat)
## 
## Deviance Residuals:
##     Min      1Q   Median      3Q     Max
## -1.9951  -0.8100  -0.5167   0.9006   2.2449
## 
## Coefficients:
##                          Estimate Std. Error z value Pr(>|z|)
## (Intercept)             -1.520775   0.452260  -3.363 0.000772 ***
## genderMasculine         -0.165198   0.170446  -0.969 0.332438
## NSEMiddle-low           -0.355872   0.381064  -0.934 0.350361
## NSEMiddle               -0.505089   0.362678  -1.393 0.163722
## NSEMiddle-high          -0.585483   0.379285  -1.544 0.122673
## NSEHigh                 -1.020198   0.524581  -1.945 0.051801 .
## pastry_dic1              0.386058   0.146327   2.638 0.008332 **
## pastry_dic>=2            0.622817   0.181452   3.432 0.000598 ***
## sweet_drink2            -0.242581   0.275795  -0.880 0.379093
## sweet_drink>=3          -0.397518   0.299744  -1.326 0.184777
## sweet_drink<1           -0.007261   0.217706  -0.033 0.973394
## sweet_drink0            -0.016559   0.219464  -0.075 0.939855
## frit_dic1                0.199766   0.155290   1.286 0.198302
## frit_dic>=2              0.218303   0.179255   1.218 0.223287
## fast_food< 1             0.112314   0.157422   0.713 0.475560
## fast_food1               0.016393   0.285260   0.057 0.954175
## fast_food2               0.060992   0.555633   0.110 0.912592
## fast_food=> 3            0.446742   0.620320   0.720 0.471414
## weigth_reportedIncreased 1.670240   0.128773  12.970  < 2e-16 ***
## weigth_reportedDecreased -0.522795  0.282096  -1.853 0.063846 .
## bai_catMild              0.431812   0.170800   2.528 0.011466 *
## bai_catModerate          0.728472   0.179809   4.051 5.09e-05 ***
## bai_catSevere            0.791634   0.186333   4.248 2.15e-05 ***
## sh_catYes                0.328807   0.127862   2.572 0.010123 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 2026.9  on 1482  degrees of freedom
## Residual deviance: 1644.6  on 1459  degrees of freedom
##   (213 observations deleted due to missingness)
## AIC: 1692.6
## 
## Number of Fisher Scoring iterations: 4
```

213 observations deleted due to missingness are "descreased" size_food cases. Because model is comparing increased over mantaneid.

```r
sum(is.na(dat$inc.size))
```

```
## [1] 213
```

```
table(dat$size_food, dat$inc.size)
```

```
##
##             FALSE TRUE
##   Same        845    0
##   Increased     0  638
##   Decreased     0    0
```

```
table(dat$size_food)
```

```
##
##      Same Increased Decreased
##       845       638       213
```

or__plot2 figure 4

```
explanatory = c("gender", "NSE", "pastry_dic", "sweet_drink", "frit_dic","fast_food",
                "size_food", "bai_cat", "sh_cat")


dependent = "inc.weigth"
dat %>%
  or_plot(dependent, explanatory,
          table_text_size=3, title_text_size=12,
          dependent_label = "Dependent Variable: Increased Weight reported",
          suffix = " ",
          plot_opts=list(xlab("OR, 95% CI"),
                        theme(axis.title = element_text(size=12),
                              axis.text.x = element_text(size=8)
                        )
          )
  )
```

```
## Warning: Removed 9 rows containing missing values (geom_errorbarh).
```

Dependent Variable: Increased Weight reported

		OR, 95% CI
Gender	Femenine	–
	Masculine	0.87 (0.64–1.19, p=0.397)
Socieconomic Status	Low	–
	Middle–low	1.15 (0.57–2.29, p=0.699)
	Middle	1.11 (0.57–2.13, p=0.763)
	Middle–high	0.99 (0.49–1.97, p=0.971)
	High	1.04 (0.40–2.62, p=0.940)
Pastry	< 1	–
	1	1.41 (1.06–1.86, p=0.017)
	>=2	1.49 (1.05–2.13, p=0.027)
Sugar–sweetened beverage	1	–
	2	1.55 (0.92–2.61, p=0.097)
	>=3	1.61 (0.91–2.85, p=0.105)
	<1	0.91 (0.60–1.37, p=0.646)
	0	1.03 (0.68–1.55, p=0.892)
Fried Food	<1	–
	1	0.83 (0.62–1.11, p=0.219)
	>=2	1.21 (0.86–1.71, p=0.262)
Fast/Junk Food	0	–
	< 1	1.54 (1.16–2.06, p=0.003)
	1	1.56 (0.90–2.70, p=0.113)
	2	4.37 (1.35–17.77, p=0.022)
	=> 3	3.24 (0.84–16.56, p=0.114)
Food serving size	Same	–
	Increased	5.76 (4.53–7.35, p<0.001)
	Decreased	0.22 (0.13–0.36, p<0.001)
Anxiety (BAI)	Minimal	–
	Mild	1.27 (0.93–1.74, p=0.132)
	Moderate	1.32 (0.94–1.84, p=0.104)
	Severe	1.81 (1.28–2.56, p=0.001)
Anhedonia (SHAPS	No	–
	Yes	1.33 (1.05–1.70, p=0.020)

OR, 95% CI
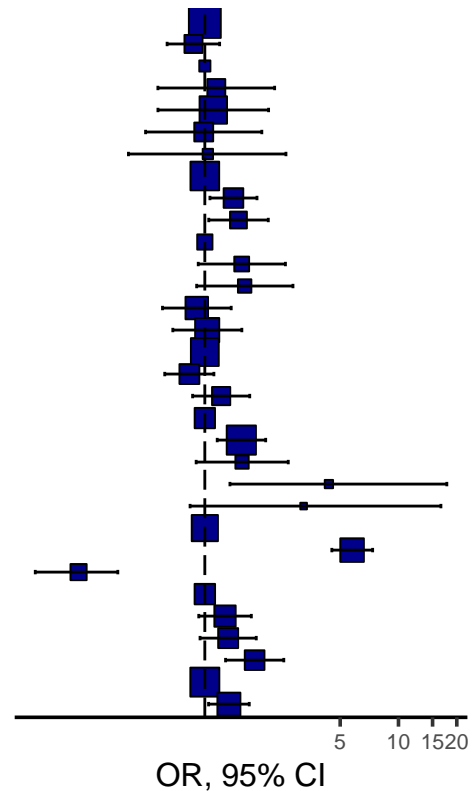
summary model figure 4

```
mod2 <- glm( inc.weigth ~ gender + NSE + pastry_dic + sweet_drink + frit_dic + fast_food +
             bai_cat + sh_cat, dat, family = "binomial")
```

```
summary(mod2)
```

```
##
## Call:
## glm(formula = inc.weigth ~ gender + NSE + pastry_dic + sweet_drink +
##     frit_dic + fast_food + bai_cat + sh_cat, family = "binomial",
##     data = dat)
##
## Deviance Residuals:
##    Min     1Q  Median     3Q     Max
## -2.164  -1.023  -0.727   1.144   1.991
##
## Coefficients:
##                 Estimate Std. Error z value Pr(>|z|)
## (Intercept)    -1.507347   0.362691  -4.156 3.24e-05 ***
## genderMasculine -0.215171   0.142397  -1.511 0.130773
## NSEMiddle-low   0.202070   0.304802   0.663 0.507360
## NSEMiddle       0.140254   0.287624   0.488 0.625811
## NSEMiddle-high  0.009671   0.303640   0.032 0.974592
## NSEHigh        -0.031939   0.423410  -0.075 0.939870
## pastry_dic1     0.588463   0.126346   4.658 3.20e-06 ***
```

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```
## pastry_dic>=2     0.770316    0.159686    4.824 1.41e-06 ***
## sweet_drink2      0.294314    0.232971    1.263 0.206479
## sweet_drink>=3     0.281706    0.259342    1.086 0.277375
## sweet_drink<1     -0.035634    0.183416   -0.194 0.845955
## sweet_drink0       0.056171    0.183779    0.306 0.759877
## frit_dic1         -0.120388    0.131606   -0.915 0.360318
## frit_dic>=2        0.259007    0.153858    1.683 0.092294 .
## fast_food< 1       0.474876    0.131404    3.614 0.000302 ***
## fast_food1         0.557823    0.251992    2.214 0.026853 *
## fast_food2         1.512098    0.583413    2.592 0.009547 **
## fast_food=> 3      1.535466    0.686475    2.237 0.025303 *
## bai_catMild        0.366558    0.144184    2.542 0.011013 *
## bai_catModerate    0.446753    0.151484    2.949 0.003186 **
## bai_catSevere      0.765564    0.156878    4.880 1.06e-06 ***
## sh_catYes          0.337016    0.109079    3.090 0.002004 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2332.4  on 1695  degrees of freedom
## Residual deviance: 2160.1  on 1674  degrees of freedom
## AIC: 2204.1
##
## Number of Fisher Scoring iterations: 4
```

## Additional analysis with continus psychologycal variables

Descriptive tables

```
dat %>%
group_by(gender) %>%
summarise(mean(bai_total),sd(bai_total),
        mean(sh_total), sd(sh_total)) %>%
  ungroup()
```

```
## # A tibble: 2 x 5
##   gender    'mean(bai_total)' 'sd(bai_total)' 'mean(sh_total)' 'sd(sh_total)'
##   <fct>                 <dbl>           <dbl>            <dbl>          <dbl>
## 1 Femenine               17.6            12.2             2.56           3.54
## 2 Masculine              13.3            10.9             2.97           3.92
```

```
dat %>%
group_by(NSE) %>%
summarise(mean(bai_total),sd(bai_total),
        mean(sh_total), sd(sh_total)) %>%
  ungroup()
```

```
## # A tibble: 5 x 5
##   NSE       'mean(bai_total)' 'sd(bai_total)' 'mean(sh_total)' 'sd(sh_total)'
##   <fct>                 <dbl>           <dbl>            <dbl>          <dbl>
```

```
## 1 Low                       24.6          14.2          4.2          4.27
## 2 Middle-low                 18.8          13.0          3.23         4.03
## 3 Middle                     16.9          11.7          2.54         3.58
## 4 Middle-high                14.4          11.4          2.15         3.07
## 5 High                       12.3           9.35         2.32         3.13
```

```r
dat %>%
group_by(size_food) %>%
summarise(mean(bai_total),sd(bai_total),
        mean(sh_total), sd(sh_total)) %>%
  ungroup()
```

```
## # A tibble: 3 x 5
##   size_food `mean(bai_total)` `sd(bai_total)` `mean(sh_total)` `sd(sh_total)`
##   <fct>                 <dbl>           <dbl>            <dbl>          <dbl>
## 1 Same                   14.3            11.2             2.24           3.53
## 2 Increased              20.0            12.4             3.08           3.69
## 3 Decreased              17.5            12.3             2.85           3.51
```

```r
dat %>%
group_by(weigth_reported) %>%
summarise(mean(bai_total),sd(bai_total),
        mean(sh_total), sd(sh_total)) %>%
  ungroup()
```

```
## # A tibble: 3 x 5
##   weigth_reported `mean(bai_total~ `sd(bai_total)` `mean(sh_total)`
##   <fct>                      <dbl>           <dbl>            <dbl>
## 1 Same                        14.0            10.6             2.11
## 2 Increased                   19.5            12.5             3.11
## 3 Decreased                   16.9            12.9             2.66
## # ... with 1 more variable: `sd(sh_total)` <dbl>
```

Plots

```r
ggplot(dat, aes(bai_total, sh_total, color = gender))+
  geom_point()+
  geom_smooth(method = "lm", aes(color = gender))+
  labs( x = "BAI total Score",
        y = "SHAPS Total Score")+
  my_theme()
```
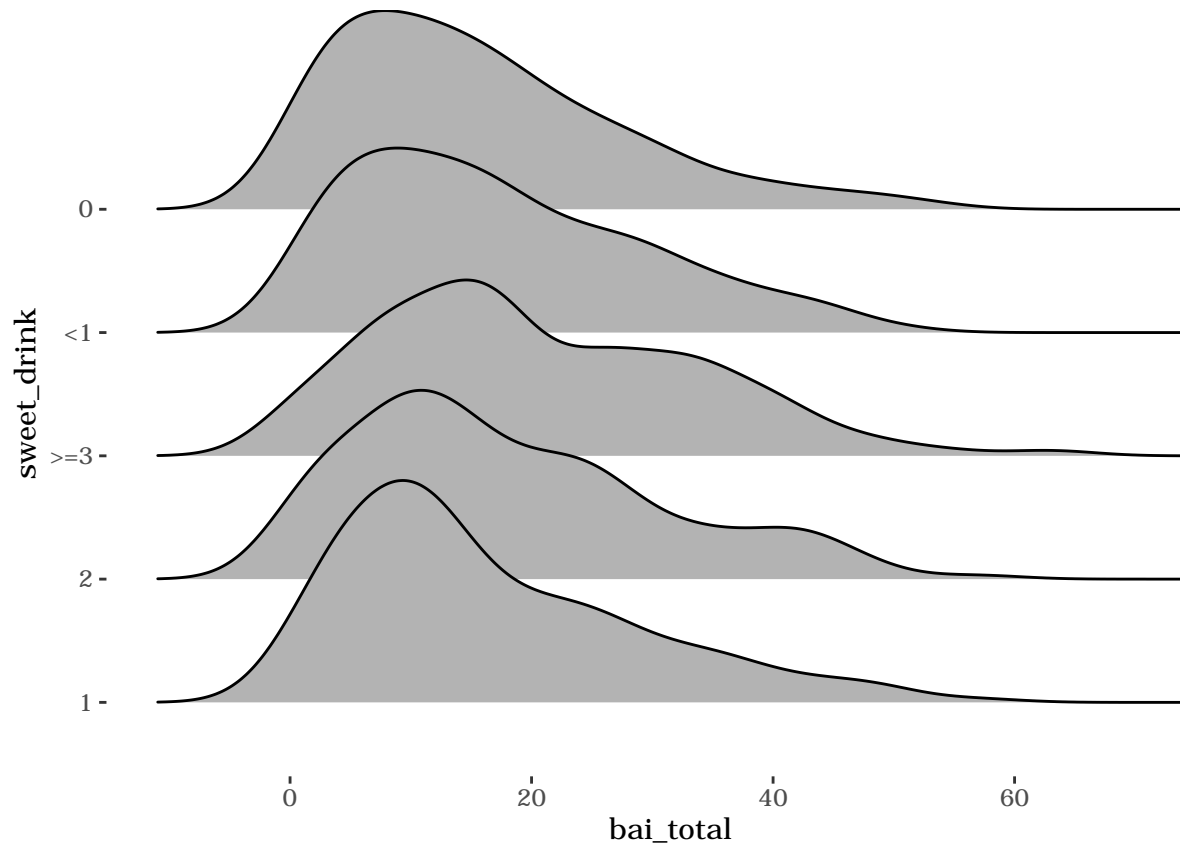
```
## `geom_smooth()` using formula 'y ~ x'
```

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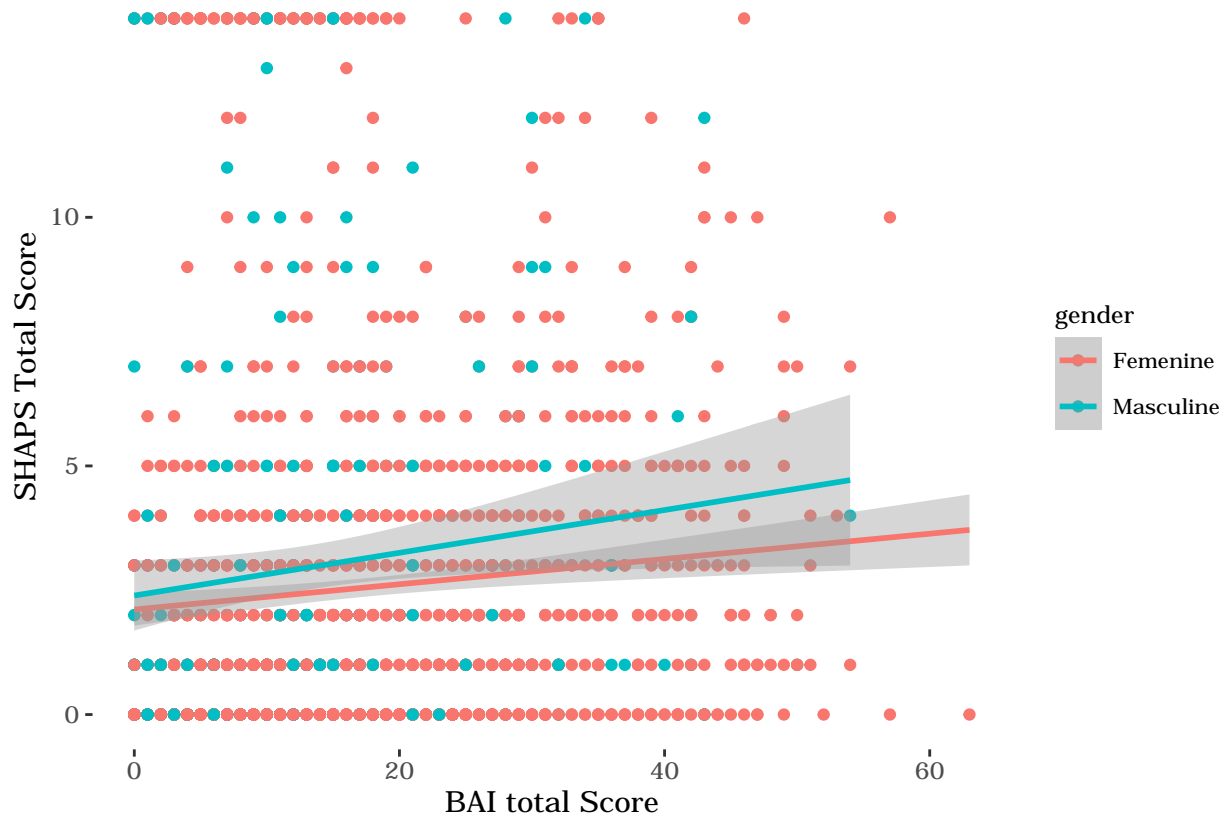
Bai by nutritional variables groups

```
library(ggridges)
```

```
## Warning: package 'ggridges' was built under R version 3.6.3
```
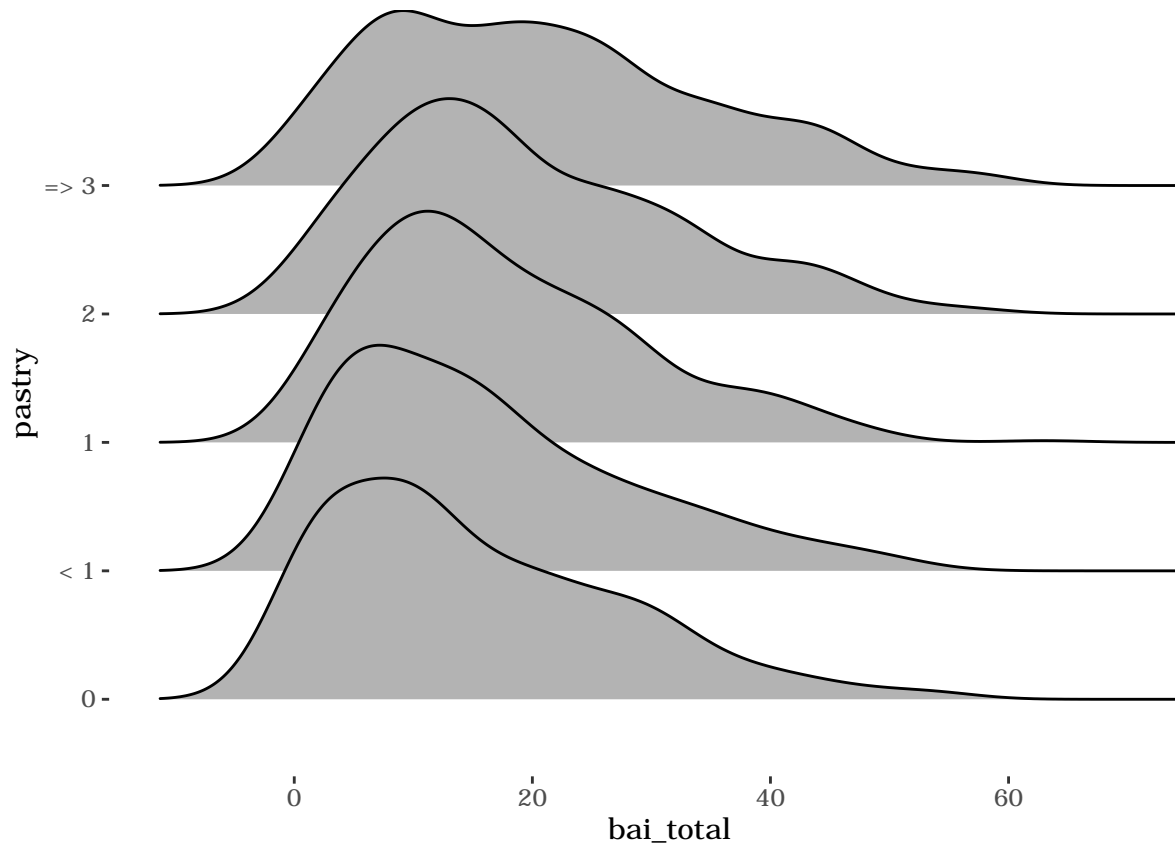
```
ggplot(dat, aes(bai_total, sweet_drink))+
  geom_density_ridges()+
  my_theme()
```

```
## Picking joint bandwidth of 3.65
```
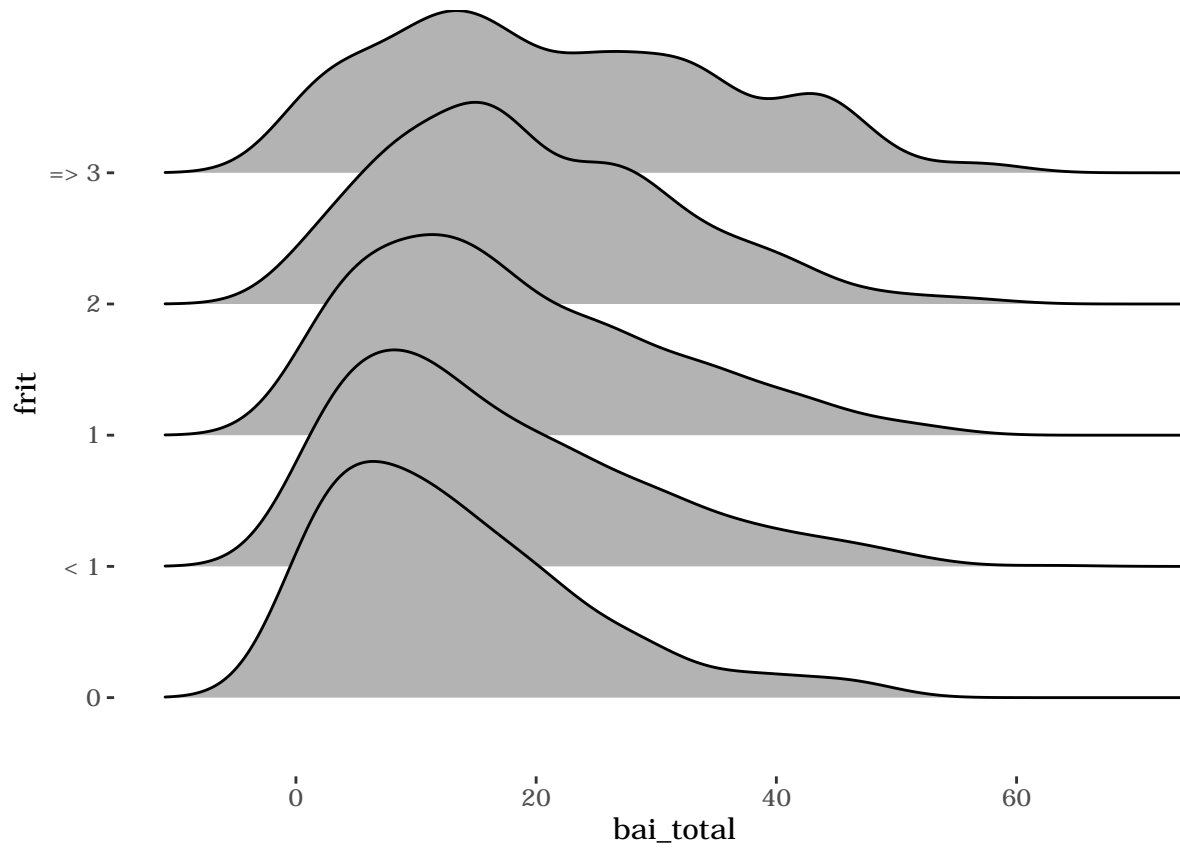
```
ggplot(dat, aes(bai_total, pastry))+
  geom_density_ridges()+
  my_theme()
```

```
## Picking joint bandwidth of 3.76
```
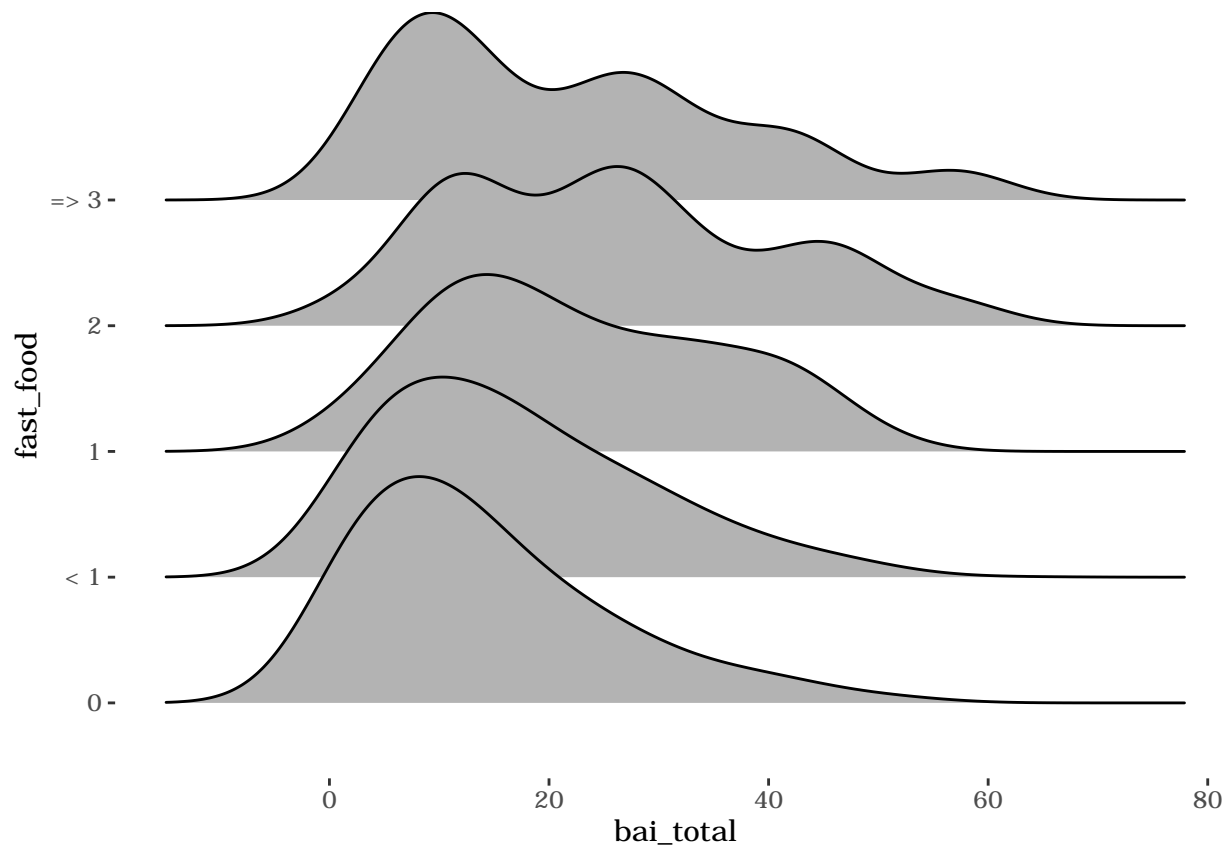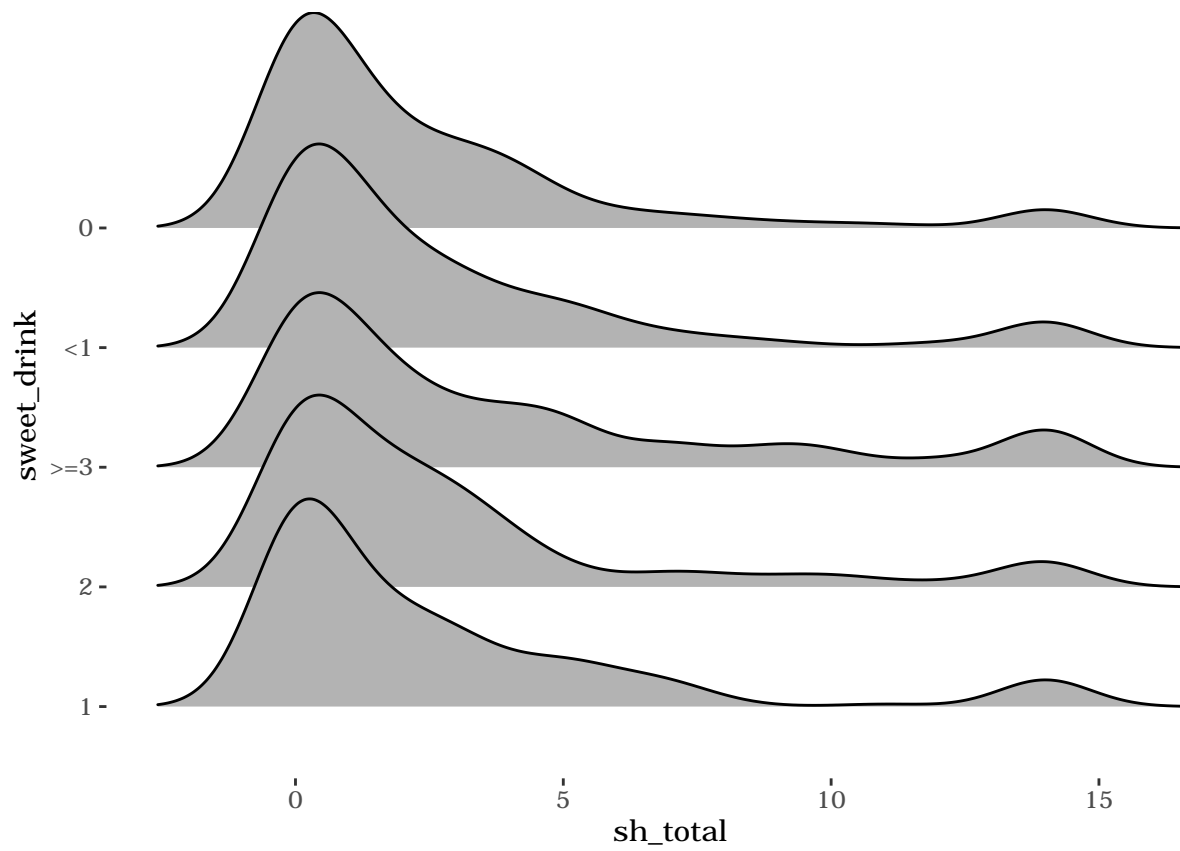
```
ggplot(dat, aes(bai_total, frit))+
  geom_density_ridges()+
  my_theme()
```

Picking joint bandwidth of 3.63

```
ggplot(dat, aes(bai_total, fast_food))+
  geom_density_ridges()+
  my_theme()
```

```
## Picking joint bandwidth of 4.96
```
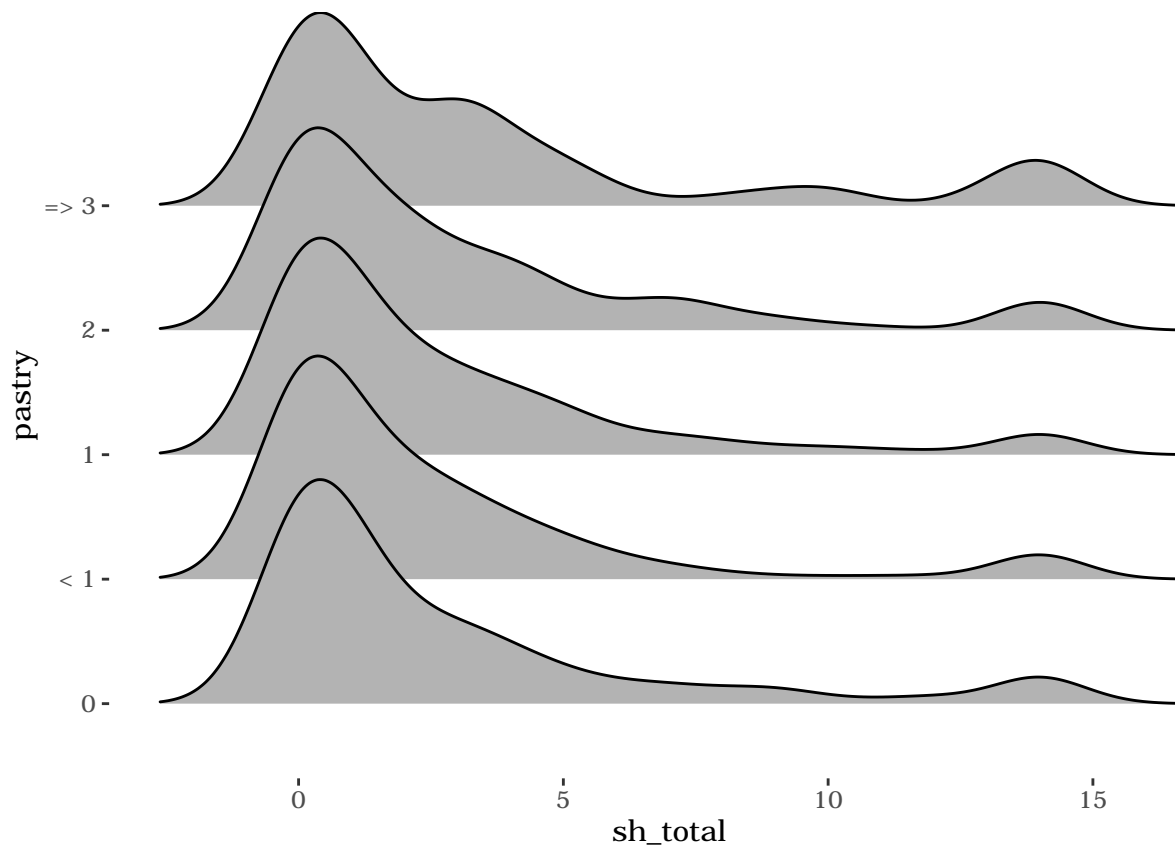
SH by nutritional variables groups

```
ggplot(dat, aes(sh_total, sweet_drink))+
  geom_density_ridges()+
  my_theme()
```

```
## Picking joint bandwidth of 0.857
```
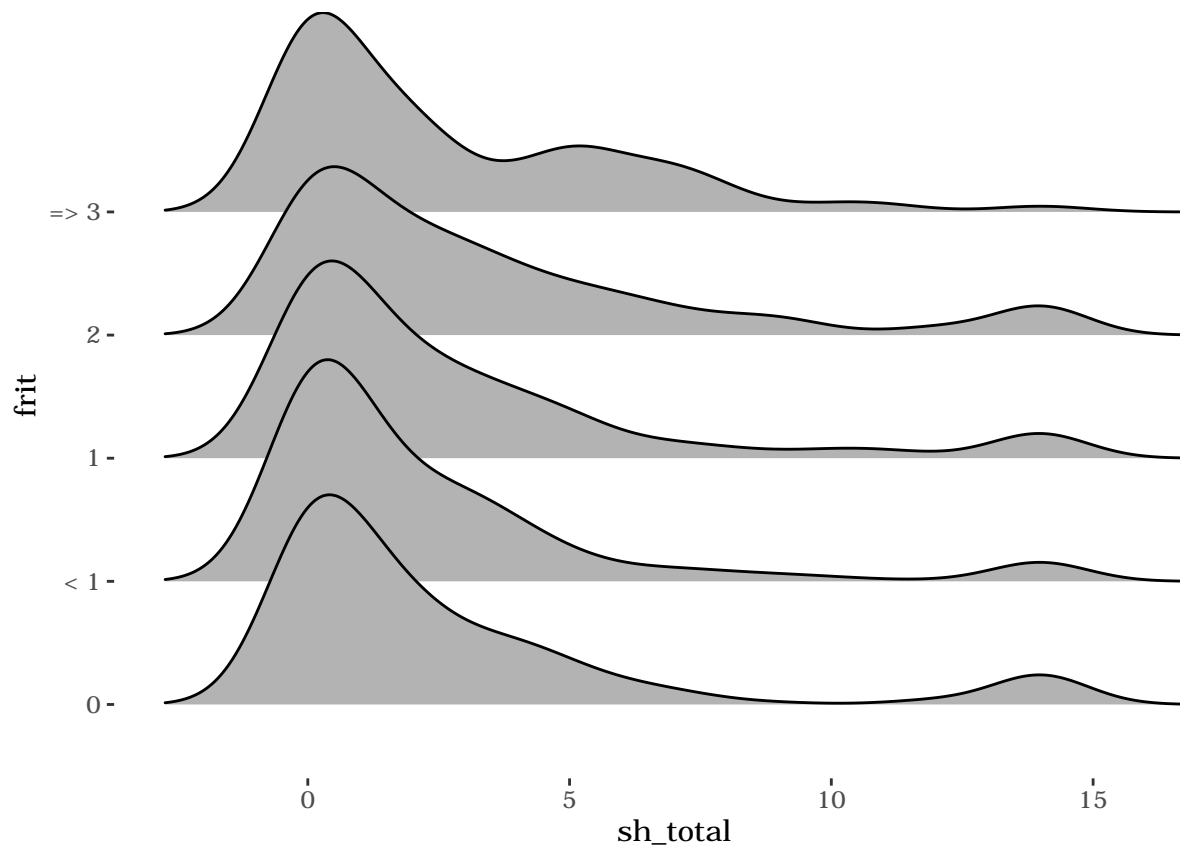
```
ggplot(dat, aes(sh_total, pastry))+
  geom_density_ridges()+
  my_theme()
```

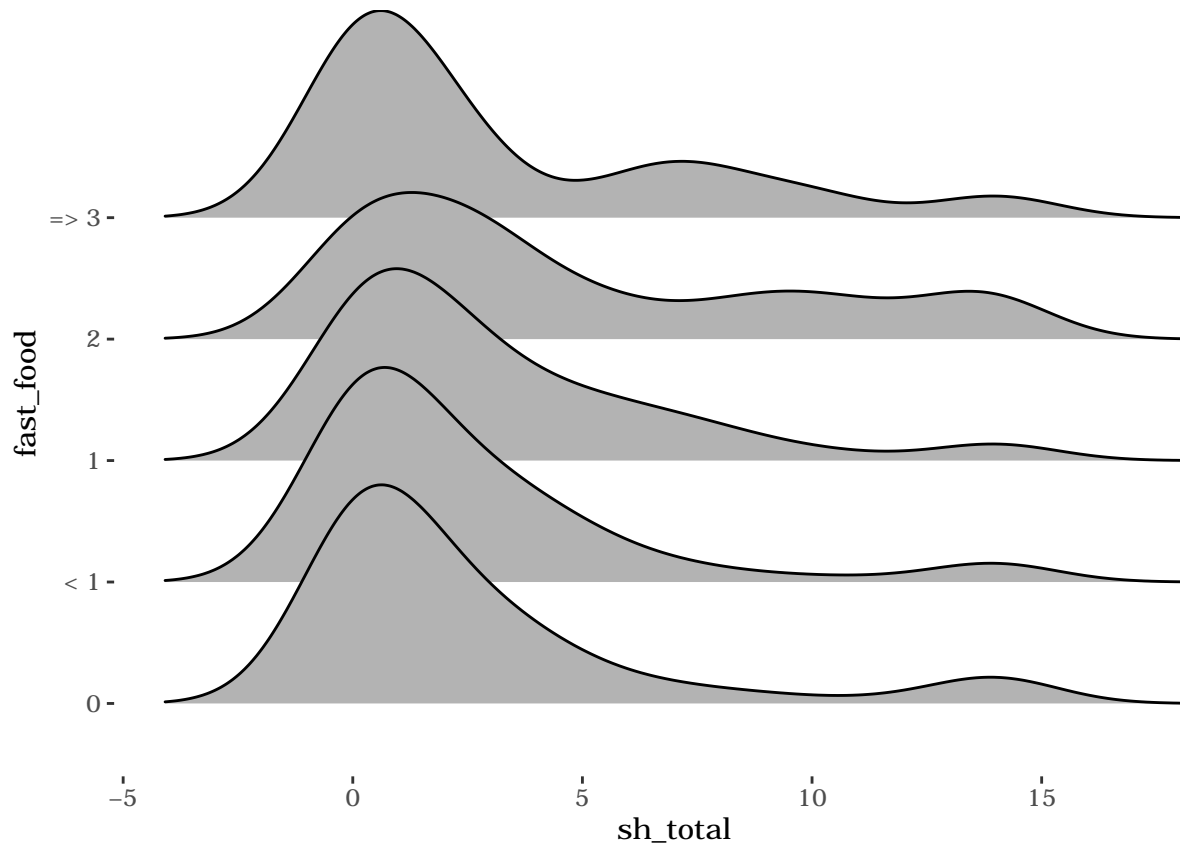## Picking joint bandwidth of 0.872

```
ggplot(dat, aes(sh_total, frit))+
  geom_density_ridges()+
  my_theme()
```

```
## Picking joint bandwidth of 0.909
```

```
ggplot(dat, aes(sh_total, fast_food))+
  geom_density_ridges()+
  my_theme()
```

Picking joint bandwidth of 1.36

models with continus psychological variable

Dependent variable = Increased or not food serving size

```
mod3 <- glm(inc.size ~ gender +  NSE +  pastry_dic +  sweet_drink +  frit_dic + fast_food +
            weigth_reported + bai_total +  sh_total, dat, family = "binomial")
```

```
summary(mod3)
```

```
##
## Call:
## glm(formula = inc.size ~ gender + NSE + pastry_dic + sweet_drink +
##     frit_dic + fast_food + weigth_reported + bai_total + sh_total,
##     family = "binomial", data = dat)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -2.2926  -0.7882  -0.5401   0.9151   2.1513
##
## Coefficients:
##                     Estimate Std. Error z value Pr(>|z|)
## (Intercept)        -1.4930325  0.4531349  -3.295 0.000985 ***
## genderMasculine    -0.1565097  0.1695592  -0.923 0.355987
## NSEMiddle-low      -0.3302974  0.3833445  -0.862 0.388897
```

```
## NSEMiddle                  -0.4543192  0.3653825  -1.243 0.213718
## NSEMiddle-high             -0.5337457  0.3819669  -1.397 0.162305
## NSEHigh                    -0.9499346  0.5256986  -1.807 0.070763 .
## pastry_dic1                 0.4130451  0.1458552   2.832 0.004627 **
## pastry_dic>=2               0.6484000  0.1818107   3.566 0.000362 ***
## sweet_drink2               -0.2428261  0.2756123  -0.881 0.378295
## sweet_drink>=3             -0.4273114  0.3012235  -1.419 0.156020
## sweet_drink<1               0.0004771  0.2171724   0.002 0.998247
## sweet_drink0               -0.0064984  0.2188016  -0.030 0.976306
## frit_dic1                   0.1896454  0.1545877   1.227 0.219905
## frit_dic>=2                 0.2419571  0.1784567   1.356 0.175153
## fast_food< 1                0.1067016  0.1571933   0.679 0.497270
## fast_food1                 -0.0003983  0.2866477  -0.001 0.998891
## fast_food2                 -0.0218598  0.5625881  -0.039 0.969005
## fast_food=> 3               0.3358292  0.6224402   0.540 0.589517
## weigth_reportedIncreased 1.6478785  0.1288942  12.785  < 2e-16 ***
## weigth_reportedDecreased -0.5749123  0.2820697  -2.038 0.041531 *
## bai_total                   0.0268362  0.0053644   5.003 5.66e-07 ***
## sh_total                    0.0286499  0.0169484   1.690 0.090947 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2026.9  on 1482  degrees of freedom
## Residual deviance: 1648.4  on 1461  degrees of freedom
##   (213 observations deleted due to missingness)
## AIC: 1692.4
##
## Number of Fisher Scoring iterations: 4
```

Dependent variable = Increased body Weigth or not

```
mod4 <- glm( inc.weigth ~ gender +  NSE +  pastry_dic +  sweet_drink +  frit_dic + fast_food  +
             bai_total +  sh_total, dat, family = "binomial")

summary(mod4)
```

```
##
## Call:
## glm(formula = inc.weigth ~ gender + NSE + pastry_dic + sweet_drink +
##     frit_dic + fast_food + bai_total + sh_total, family = "binomial",
##     data = dat)
##
## Deviance Residuals:
##    Min      1Q   Median      3Q      Max
## -2.2325  -1.0210  -0.7158   1.1450   2.0214
##
## Coefficients:
##                 Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -1.665046   0.365790  -4.552 5.32e-06 ***
## genderMasculine -0.204536   0.142705  -1.433 0.151779
## NSEMiddle-low    0.239257   0.306198   0.781 0.434579
```

```
## NSEMiddle          0.211513   0.289175    0.731 0.464513
## NSEMiddle-high     0.099398   0.305757    0.325 0.745114
## NSEHigh            0.063550   0.423725    0.150 0.880780
## pastry_dic1        0.606461   0.126448    4.796 1.62e-06 ***
## pastry_dic>=2       0.785354   0.160446    4.895 9.84e-07 ***
## sweet_drink2        0.288418   0.234108    1.232 0.217953
## sweet_drink>=3      0.240104   0.261023    0.920 0.357647
## sweet_drink<1      -0.038759   0.184347   -0.210 0.833471
## sweet_drink0        0.066264   0.184693    0.359 0.719762
## frit_dic1          -0.133937   0.132162   -1.013 0.310856
## frit_dic>=2         0.259633   0.153976    1.686 0.091758 .
## fast_food< 1        0.485936   0.132153    3.677 0.000236 ***
## fast_food1          0.552665   0.253168    2.183 0.029036 *
## fast_food2          1.468835   0.588744    2.495 0.012601 *
## fast_food=> 3       1.504809   0.688671    2.185 0.028882 *
## bai_total           0.025509   0.004521    5.642 1.68e-08 ***
## sh_total            0.058439   0.014559    4.014 5.97e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2332.4  on 1695  degrees of freedom
## Residual deviance: 2147.9  on 1676  degrees of freedom
## AIC: 2187.9
##
## Number of Fisher Scoring iterations: 4
```

Comparison between models categorial vs continus psychologycal variables

Dependent variable = Increased food serving size

```
anova(mod1, mod3, test='LR')
```

```
## Analysis of Deviance Table
##
## Model 1: inc.size ~ gender + NSE + pastry_dic + sweet_drink + frit_dic +
##     fast_food + weigth_reported + bai_cat + sh_cat
## Model 2: inc.size ~ gender + NSE + pastry_dic + sweet_drink + frit_dic +
##     fast_food + weigth_reported + bai_total + sh_total
##   Resid. Df Resid. Dev Df Deviance Pr(>Chi)
## 1      1459     1644.6
## 2      1461     1648.4 -2  -3.8216    0.148
```

```
AIC(mod1, mod3)
```

```
##      df      AIC
## mod1 24 1692.604
## mod3 22 1692.425
```

```
BIC(mod1, mod3)
```

```
##      df      BIC
## mod1 24 1819.847
## mod3 22 1809.065
```

Dependent variable = Weigth reported

```
anova(mod2, mod4, test='LR')
```

```
## Analysis of Deviance Table
##
## Model 1: inc.weigth ~ gender + NSE + pastry_dic + sweet_drink + frit_dic +
##     fast_food + bai_cat + sh_cat
## Model 2: inc.weigth ~ gender + NSE + pastry_dic + sweet_drink + frit_dic +
##     fast_food + bai_total + sh_total
##   Resid. Df Resid. Dev Df Deviance Pr(>Chi)
## 1      1674     2160.1
## 2      1676     2147.9 -2   12.244
```

```
AIC(mod2, mod4)
```

```
##      df      AIC
## mod2 22 2204.106
## mod4 20 2187.862
```

```
BIC(mod2, mod4)
```

```
##      df      BIC
## mod2 22 2323.699
## mod4 20 2296.583
```