Social Inclusion Analysis

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```r
dat <- read_csv("~/urbanplanning/preliminary_data.csv")
```

```
## Rows: 169989 Columns: 21

## -- Column specification ----------------------------------------------------
## Delimiter: ","
## chr  (2): ethnicity, group
## dbl (19): participant, like.current.city, natives.like.me, natives.lookdown....

##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```r
dat$migration.type <- dat$migration.self
dat$migration.type[dat$migration.type == 1] <- "self"
dat$migration.type[dat$migration.fellows == 1] <- "fellows"
dat$migration.type[dat$migration.relatives == 1] <- "relatives"

col_names <- c("ethnicity","marriage","diabete_hypertension","group","recent_disease","insuranced","gen
dat[,col_names] <- lapply(dat[,col_names] , factor)

dat$income.normalized <- (dat$income-mean(dat$income,na.rm=TRUE))/sd(dat$income, na.rm = TRUE)
dat$income.thousand <- dat$income/1000

dat$participant <- as.character(dat$participant)

dat$health <- as.numeric(dat$health)
```

```r
head(dat)
```

```
## # A tibble: 6 x 24
##   participant like.current.city natives.like.me natives.lookdow~ native.customs.~
##   <chr>                   <dbl>           <dbl>            <dbl>            <dbl>
## 1 0                           1              -1                1               -1
## 2 1                           2               1                1               -1
## 3 2                           2               1                1                1
## 4 3                           1               1               -1               -1
## 5 4                           1               1               -2                1
## 6 5                           2               1               -2                2
## # ... with 19 more variables: i.am.native <dbl>, income <dbl>, education <dbl>,
## #   gender <fct>, ethnicity <fct>, marriage <fct>, worked_before5.1 <fct>,
## #   diabete_hypertension <fct>, recent_disease <fct>, group <fct>,
## #   participated_in_group_activity <dbl>, insuranced <fct>,
## #   migration.self <dbl>, migration.relatives <dbl>, migration.fellows <dbl>,
## #   health <dbl>, migration.type <chr>, income.normalized <dbl>,
```

```
## #   income.thousand <dbl>
```

```r
dat$inclusion <-dat$like.current.city+dat$natives.like.me-dat$natives.lookdown.me-dat$native.customs.be
dat$inclusion <- (dat$inclusion-min(dat$inclusion, na.rm = TRUE))/(max(dat$inclusion, na.rm = TRUE)-min
dat$loneliness.level <- -dat$inclusion + dat$migration.self - dat$migration.relatives - dat$migration.f
dat$loneliness.level <- (dat$loneliness.level-min(dat$loneliness.level, na.rm=TRUE))/(max(dat$loneliness

dat
```

```
## # A tibble: 169,989 x 26
##    participant like.current.city natives.like.me natives.lookdown.me
##    <chr>                   <dbl>           <dbl>               <dbl>
## 1  0                           1              -1                   1
## 2  1                           2               1                   1
## 3  2                           2               1                   1
## 4  3                           1               1                  -1
## 5  4                           1               1                  -2
## 6  5                           2               1                  -2
## 7  6                           1               1                  -2
## 8  7                           1               1                  -2
## 9  8                           2               1                  -1
## 10 9                           2               2                  -2
## # ... with 169,979 more rows, and 22 more variables:
## #   native.customs.better <dbl>, i.am.native <dbl>, income <dbl>,
## #   education <dbl>, gender <fct>, ethnicity <fct>, marriage <fct>,
## #   worked_before5.1 <fct>, diabete_hypertension <fct>, recent_disease <fct>,
## #   group <fct>, participated_in_group_activity <dbl>, insuranced <fct>,
## #   migration.self <dbl>, migration.relatives <dbl>, migration.fellows <dbl>,
## #   health <dbl>, migration.type <chr>, income.normalized <dbl>, ...
```
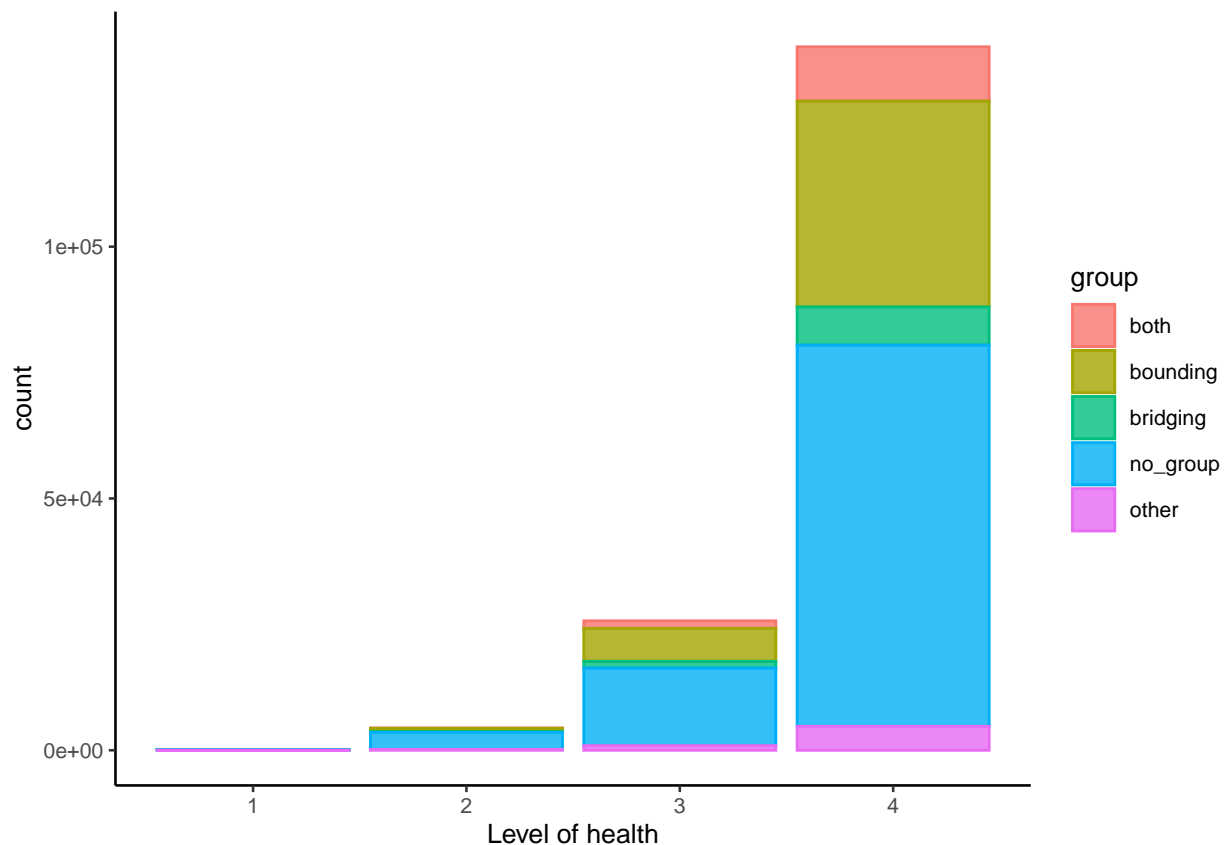
```r
cbPalette <- c("#e61212", "#ffb300", "#22ff00", "#0015ff", "#00fbff")

p1 <- ggplot(dat, aes(health, colour = group, fill=group)) +
    geom_bar(alpha=0.8) +
    labs(
        x = "Level of health",
        colour = "group") +
    theme_classic(base_size = 10)
p1
```

```
m0 <- lmer(health ~ group + like.current.city + natives.like.me + natives.lookdown.me + native.customs.
            + migration.type + (1|income) + (1|worked_before5.1) +  (1| education) + (1 |gender) + (1|etl
            data=dat)

m1 <- lmer(health ~ group + like.current.city + natives.like.me + natives.lookdown.me + native.customs.
            + migration.type + (1|income.normalized) + (1|worked_before5.1) +  (1| education) + (1 |gend
            data=dat)

m2 <- lmer(health ~ group + inclusion + participated_in_group_activity + migration.type
            + (1|income.normalized) + (1|worked_before5.1) +  (1| education) + (1 |gender) + (1|ethnicity
            data=dat)

m3 <- lmer(health ~ group + inclusion + participated_in_group_activity + loneliness.level
            + (1|income.normalized) + (1|worked_before5.1) +  (1| education) + (1 |gender) + (1|ethnicity
            data=dat)

screenreg(c(m0,m1,m2,m3))

##
## ========================================================================================
##                                 Model 1         Model 2         Model 3         Model 4
## ----------------------------------------------------------------------------------------
## (Intercept)                     3.55 ***        3.55 ***        3.52 ***        3.43 ***
##                                 (0.14)          (0.14)          (0.14)          (0.14)
## groupbounding                   0.00            0.00            0.00            0.00
##                                 (0.00)          (0.00)          (0.00)          (0.00)
## groupbridging                   -0.03 ***       -0.03 ***       -0.03 ***       -0.03 ***
##                                 (0.01)          (0.01)          (0.01)          (0.01)
```

```
## groupno_group                         -0.03 ***      -0.03 ***      -0.03 ***      -0.03 ***
##                                        (0.00)         (0.00)         (0.00)         (0.00)
## groupother                            -0.03 ***      -0.03 ***      -0.03 ***      -0.03 ***
##                                        (0.01)         (0.01)         (0.01)         (0.01)
## like.current.city                      0.02 ***       0.02 ***
##                                        (0.00)         (0.00)
## natives.like.me                        0.00           0.00
##                                        (0.00)         (0.00)
## natives.lookdown.me                   -0.01 ***      -0.01 ***
##                                        (0.00)         (0.00)
## native.customs.better                 -0.00          -0.00
##                                        (0.00)         (0.00)
## i.am.native                           -0.01 ***      -0.01 ***
##                                        (0.00)         (0.00)
## participated_in_group_activity        -0.01 ***      -0.01 ***      -0.01 ***      -0.01 ***
##                                        (0.00)         (0.00)         (0.00)         (0.00)
## migration.typefellows                 -0.05 *        -0.05 *        -0.04 *
##                                        (0.02)         (0.02)         (0.02)
## migration.typerelatives               -0.07 ***      -0.07 ***      -0.06 ***
##                                        (0.02)         (0.02)         (0.02)
## migration.typeself                    -0.04          -0.04          -0.03
##                                        (0.02)         (0.02)         (0.02)
## inclusion                                                            0.09 ***       0.10 ***
##                                                                     (0.01)         (0.01)
## loneliness.level                                                                    0.06 ***
##                                                                                    (0.00)
## ---------------------------------------------------------------------------------------------
## AIC                                    201862.82      201862.82      202028.27      202033.50
## BIC                                    202093.53      202093.53      202218.86      202204.03
## Log Likelihood                        -100908.41     -100908.41     -100995.14     -100999.75
## Num. obs.                              167873         167873         167873         167873
## Num. groups: income                    654
## Num. groups: ethnicity                 19             19             19             19
## Num. groups: education                 7              7              7              7
## Num. groups: marriage                  6              6              6              6
## Num. groups: recent_disease            3              3              3              3
## Num. groups: insuranced                2              2              2              2
## Num. groups: gender                    2              2              2              2
## Num. groups: worked_before5.1          2              2              2              2
## Var: income (Intercept)                0.06
## Var: ethnicity (Intercept)             0.00           0.00           0.00           0.00
## Var: education (Intercept)             0.01           0.01           0.01           0.01
## Var: marriage (Intercept)              0.02           0.02           0.02           0.02
## Var: recent_disease (Intercept)        0.02           0.02           0.02           0.02
## Var: insuranced (Intercept)            0.00           0.00           0.00           0.00
## Var: gender (Intercept)                0.00           0.00           0.00           0.00
## Var: worked_before5.1 (Intercept)      0.01           0.01           0.01           0.01
## Var: Residual                          0.19           0.19           0.19           0.19
## Num. groups: income.normalized                        654            654            654
## Var: income.normalized (Intercept)                    0.06           0.06           0.06
## =============================================================================================
## *** p < 0.001; ** p < 0.01; * p < 0.05
```