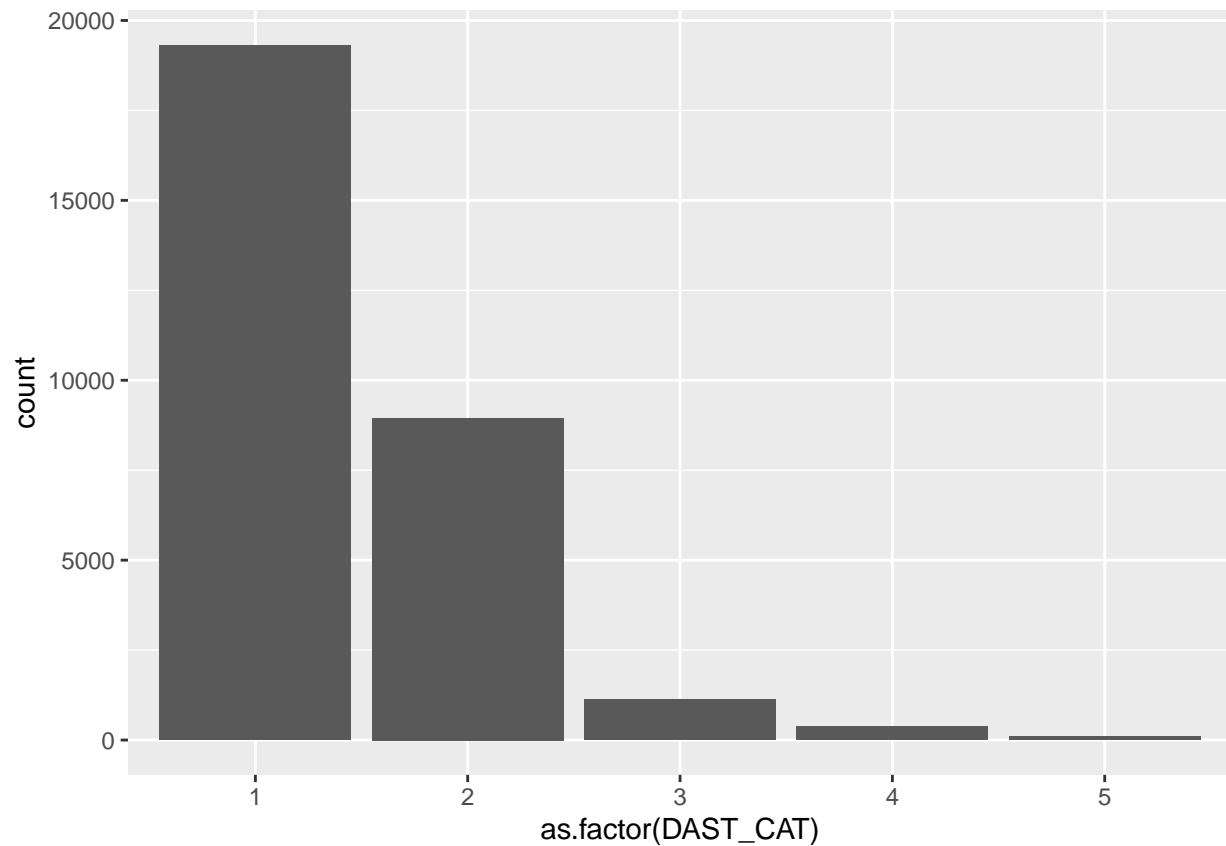# MODEL

Allison Shi

'r Sys.Date()

```r
library(tidyverse)
library(knitr)
library(broom)
library(nnet) # for multinomial logistic regression
library(patchwork)
```
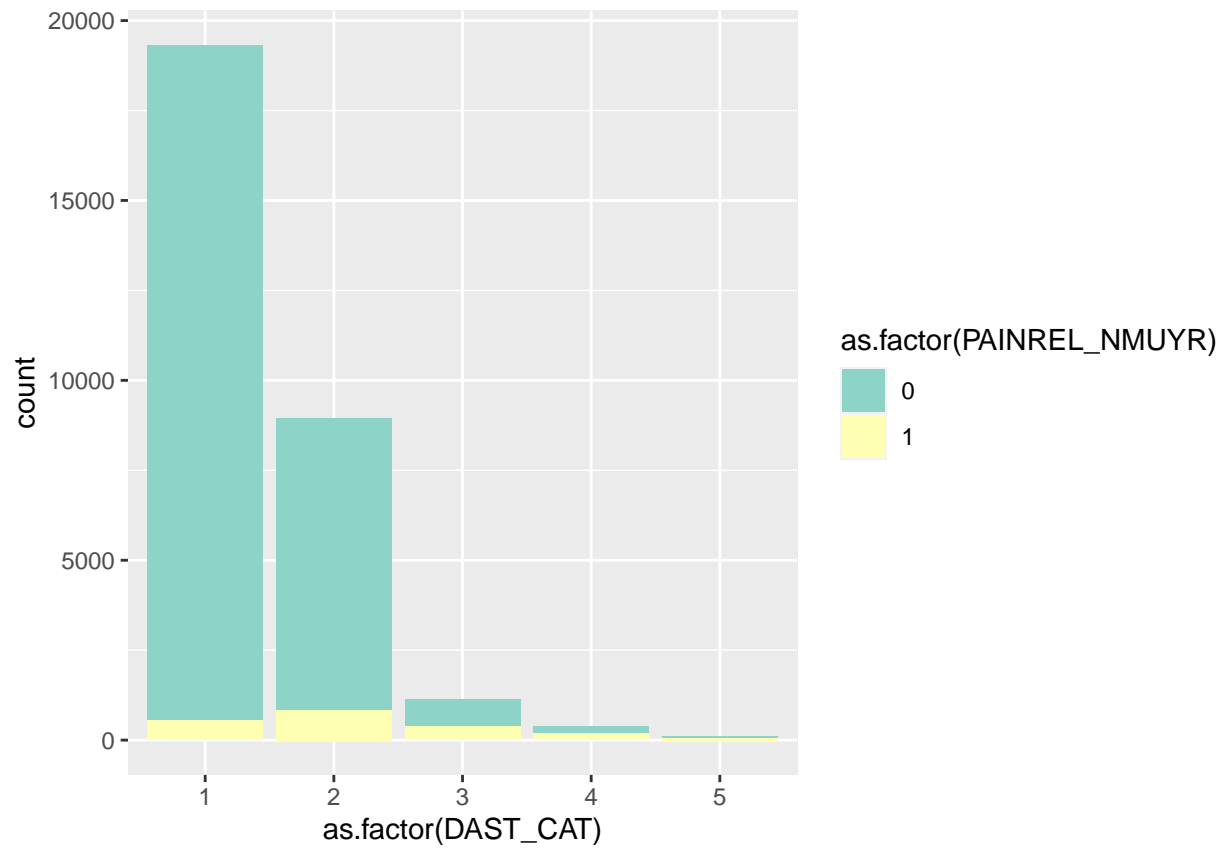
```r
us_19 <- read_csv('~/df_data/US/us_19.csv')
#glimpse(us_19)
```
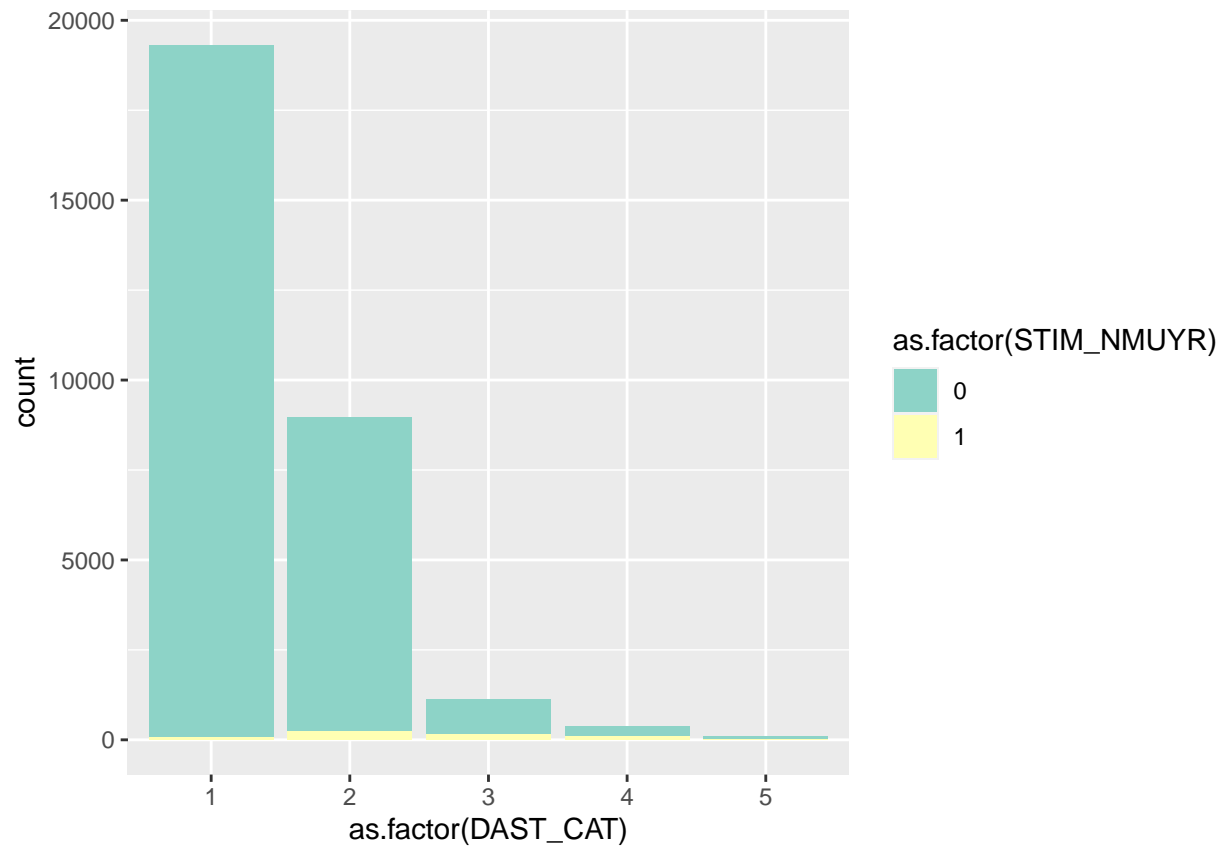
EDA

```r
ggplot(data = us_19, aes(x = as.factor(DAST_CAT))) +
  geom_bar()
```

```r
ggplot(data = us_19, aes(x = as.factor(DAST_CAT), fill = as.factor(PAINREL_NMUYR))) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```



```r
ggplot(data = us_19, aes(x = as.factor(DAST_CAT), fill = as.factor(STIM_NMUYR))) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```
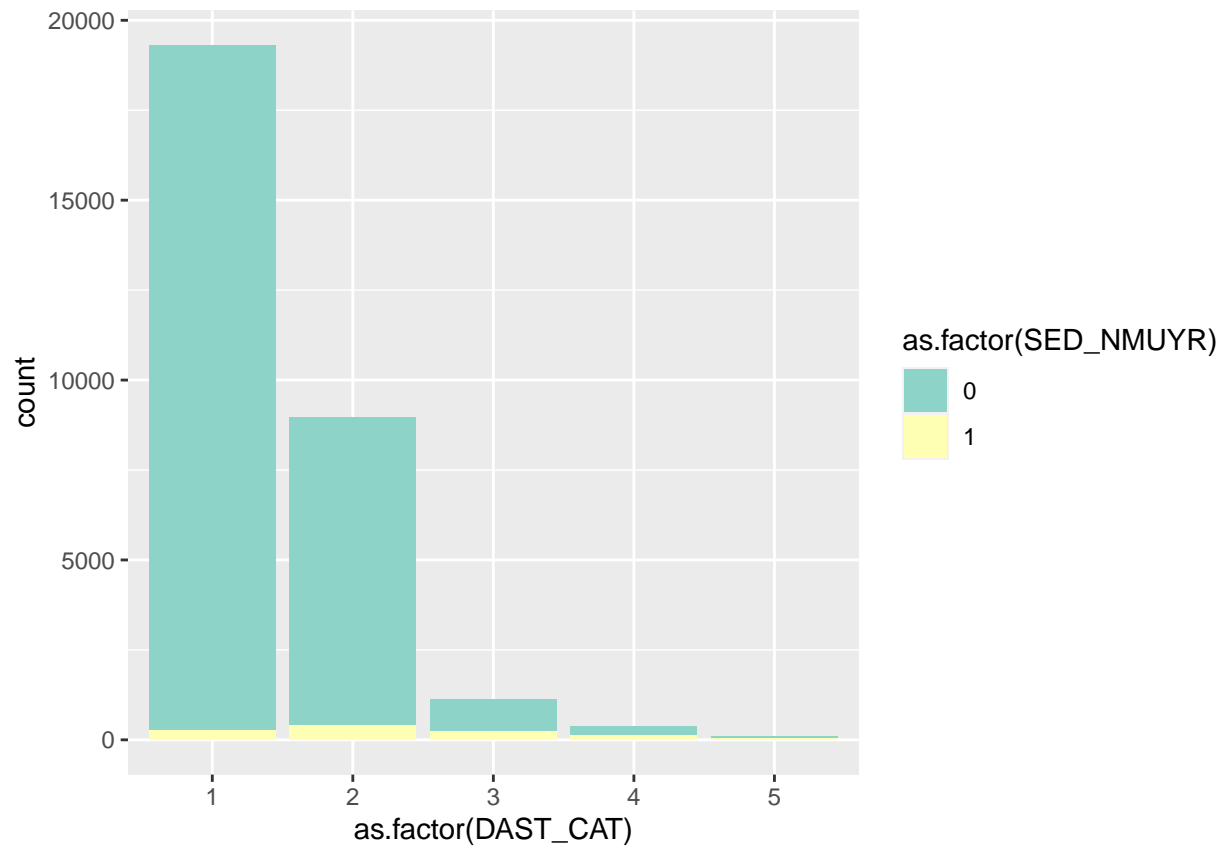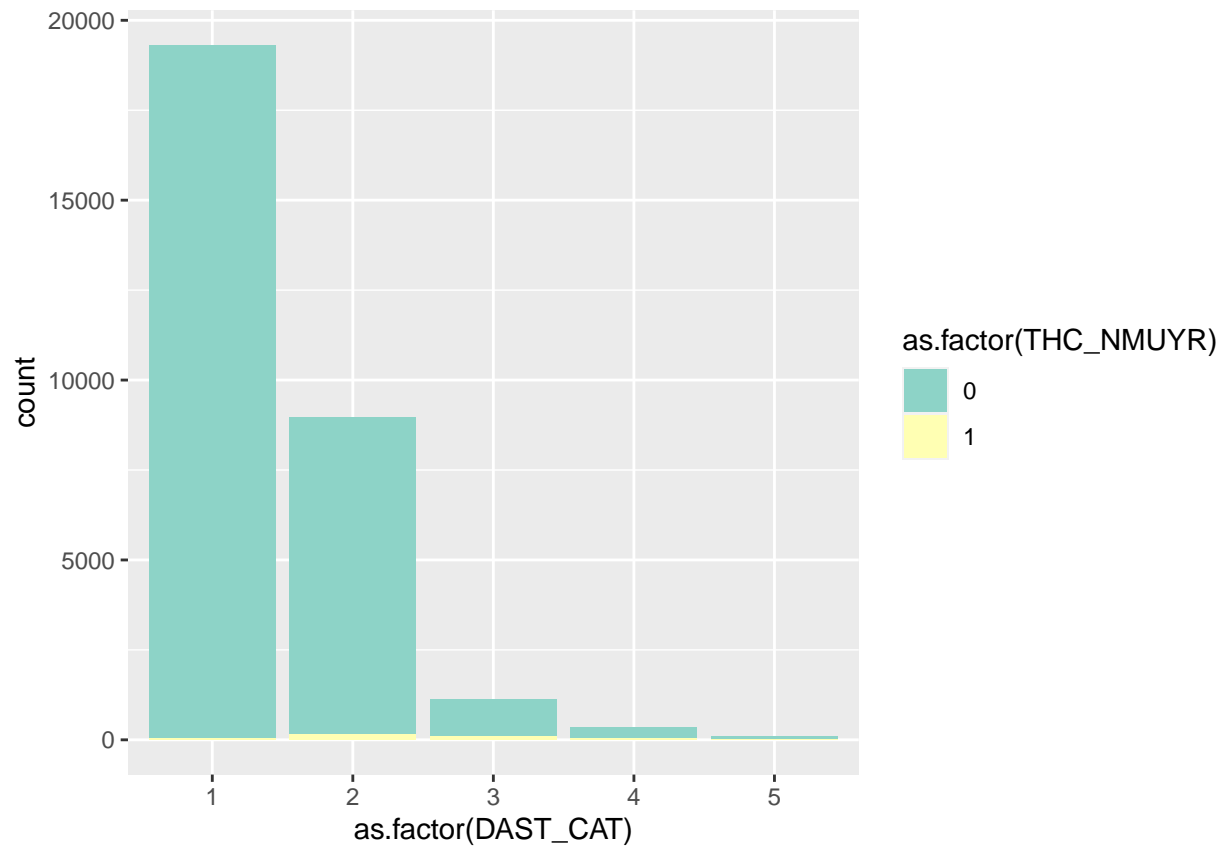
```r
ggplot(data = us_19, aes(x = as.factor(DAST_CAT), fill = as.factor(SED_NMUYR))) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```

```
ggplot(data = us_19, aes(x = as.factor(DAST_CAT), fill = as.factor(THC_NMUYR))) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```
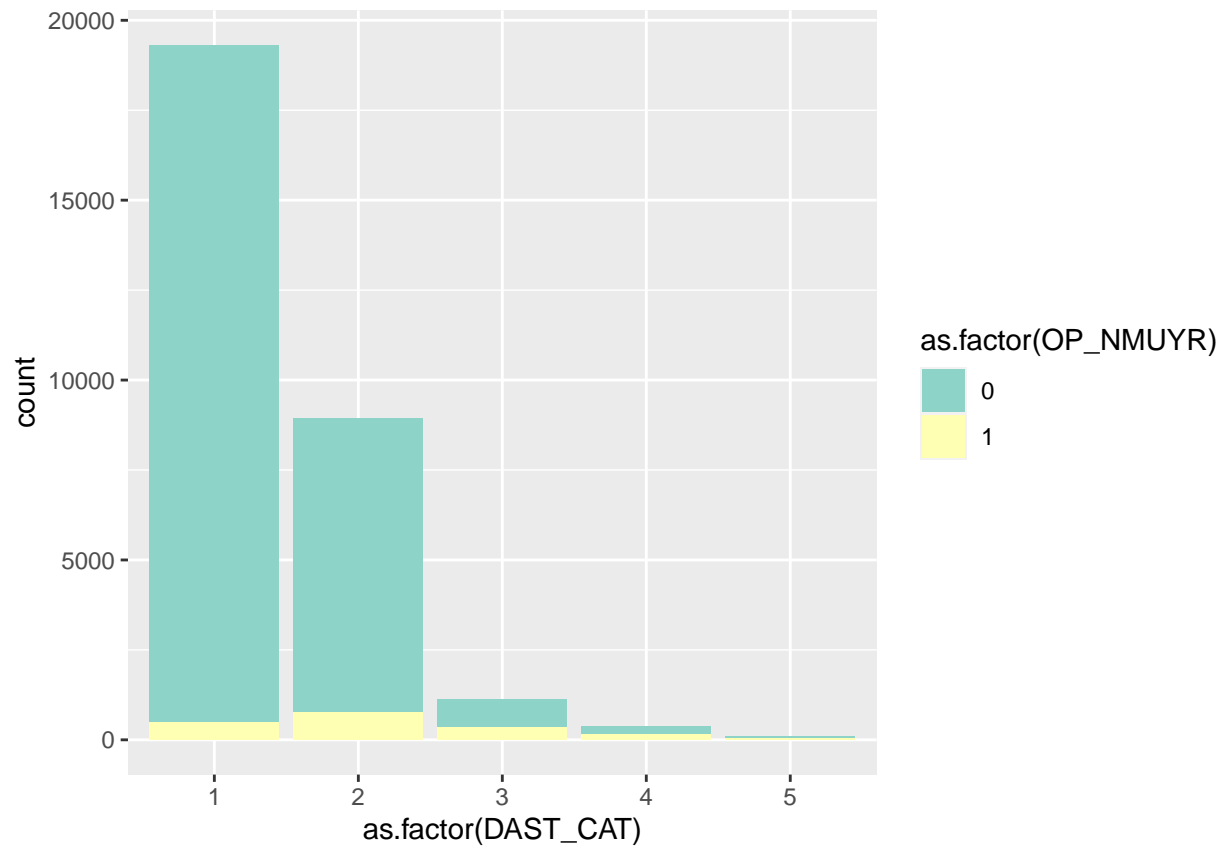
```r
ggplot(data = us_19, aes(x = as.factor(DAST_CAT), fill = as.factor(OP_NMUYR))) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```
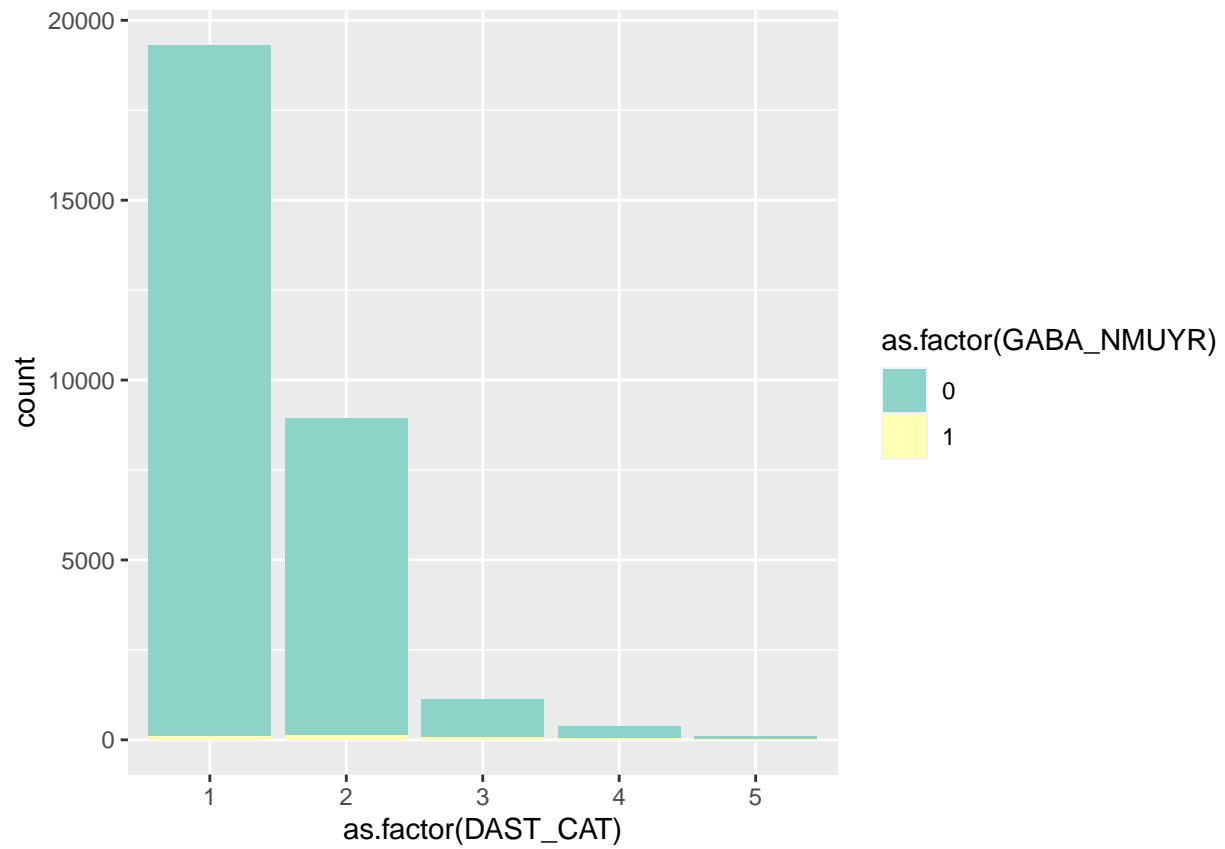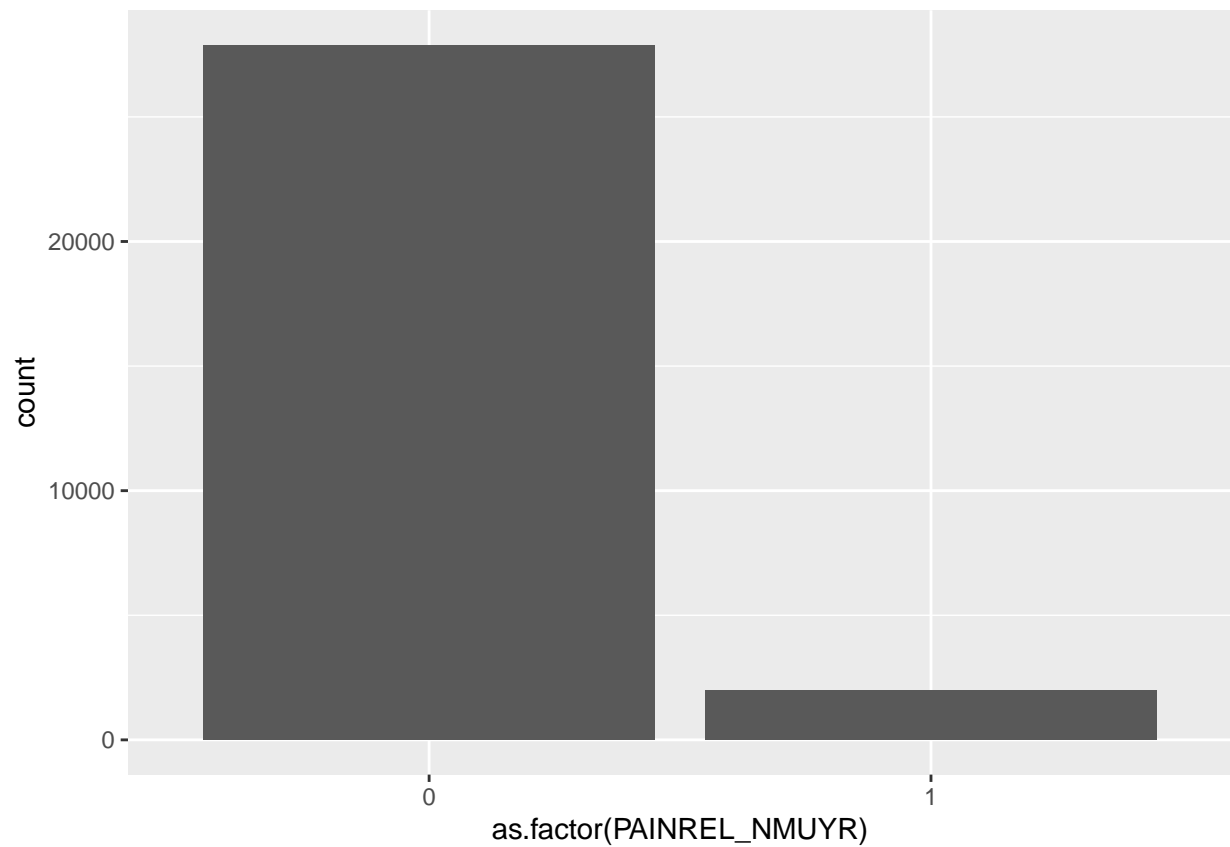
```r
ggplot(data = us_19, aes(x = as.factor(DAST_CAT), fill = as.factor(GABA_NMUYR))) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```
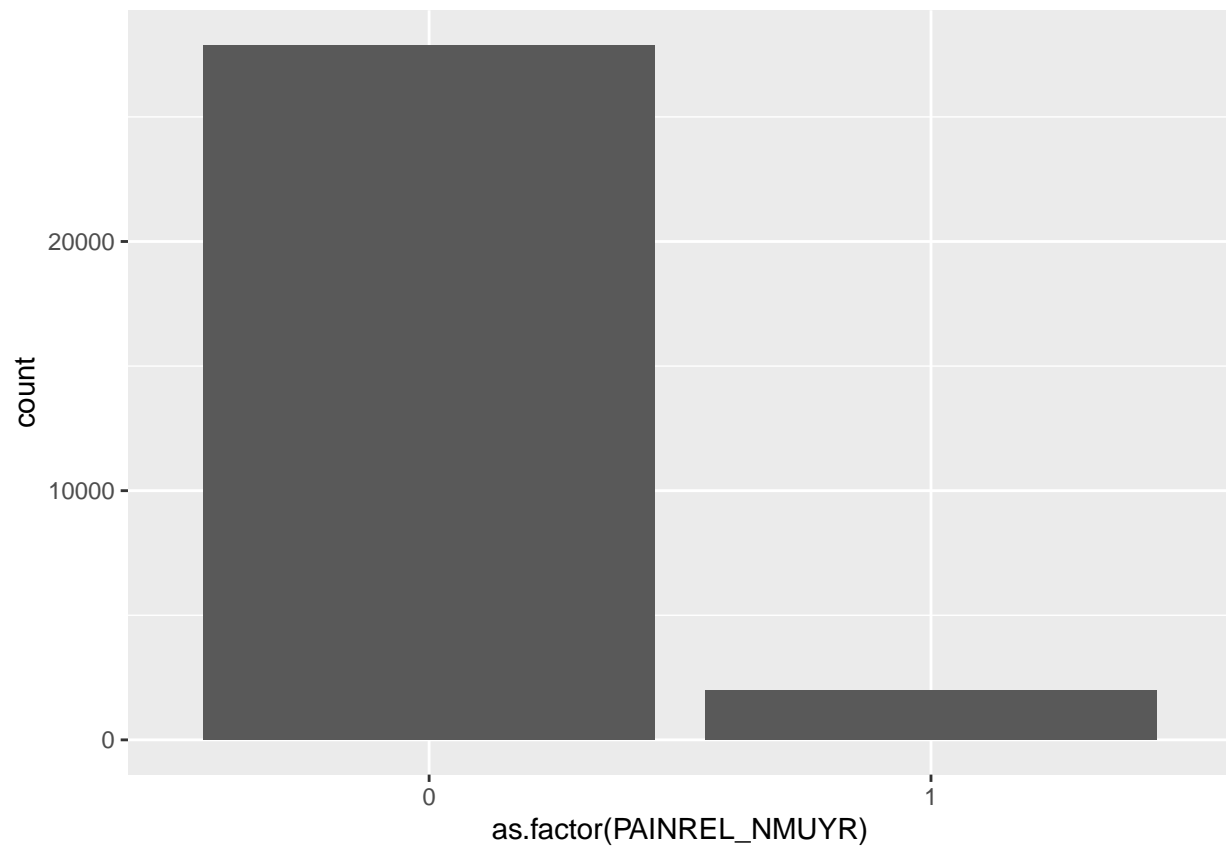
```
ggplot(data = us_19, aes(x = as.factor(PAINREL_NMUYR))) +
  geom_bar()
```

```r
ggplot(data = us_19, aes(x = as.factor(PAINREL_NMUYR))) +
  geom_bar()
```
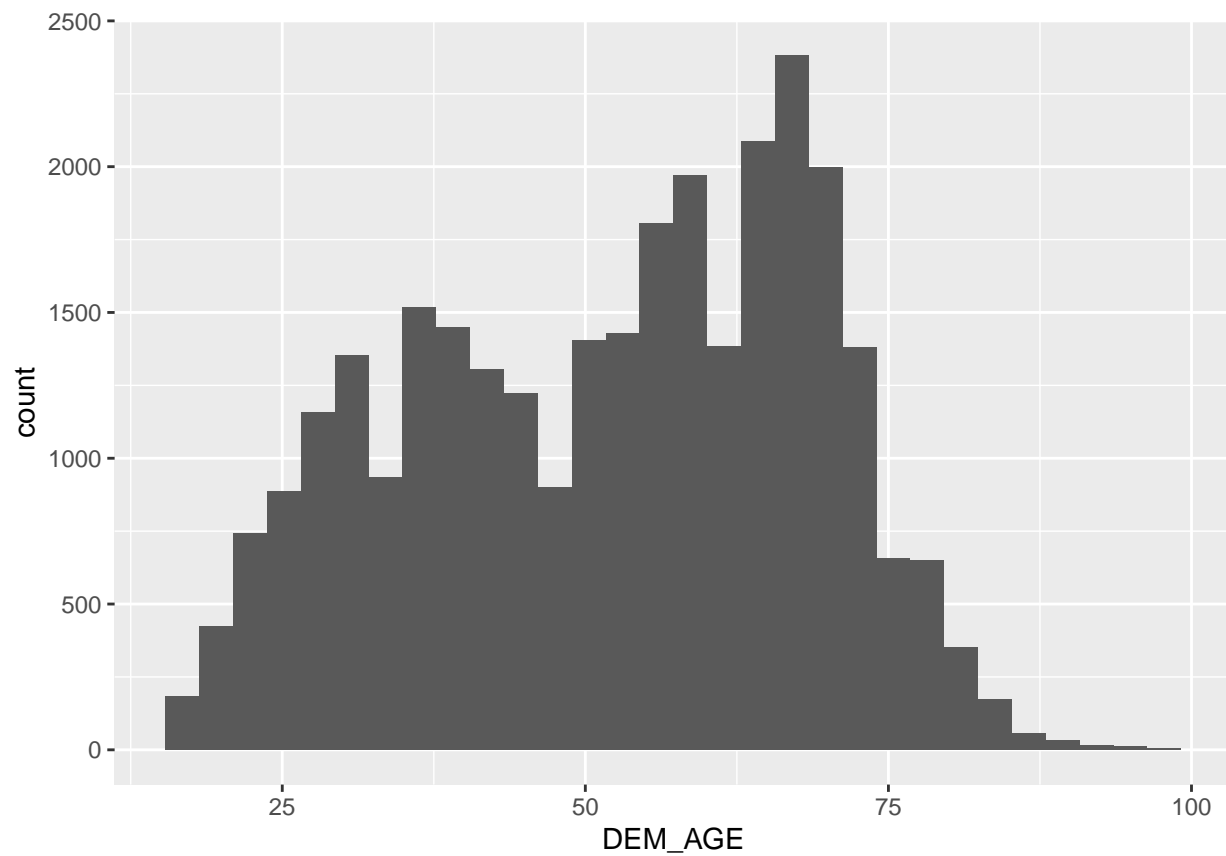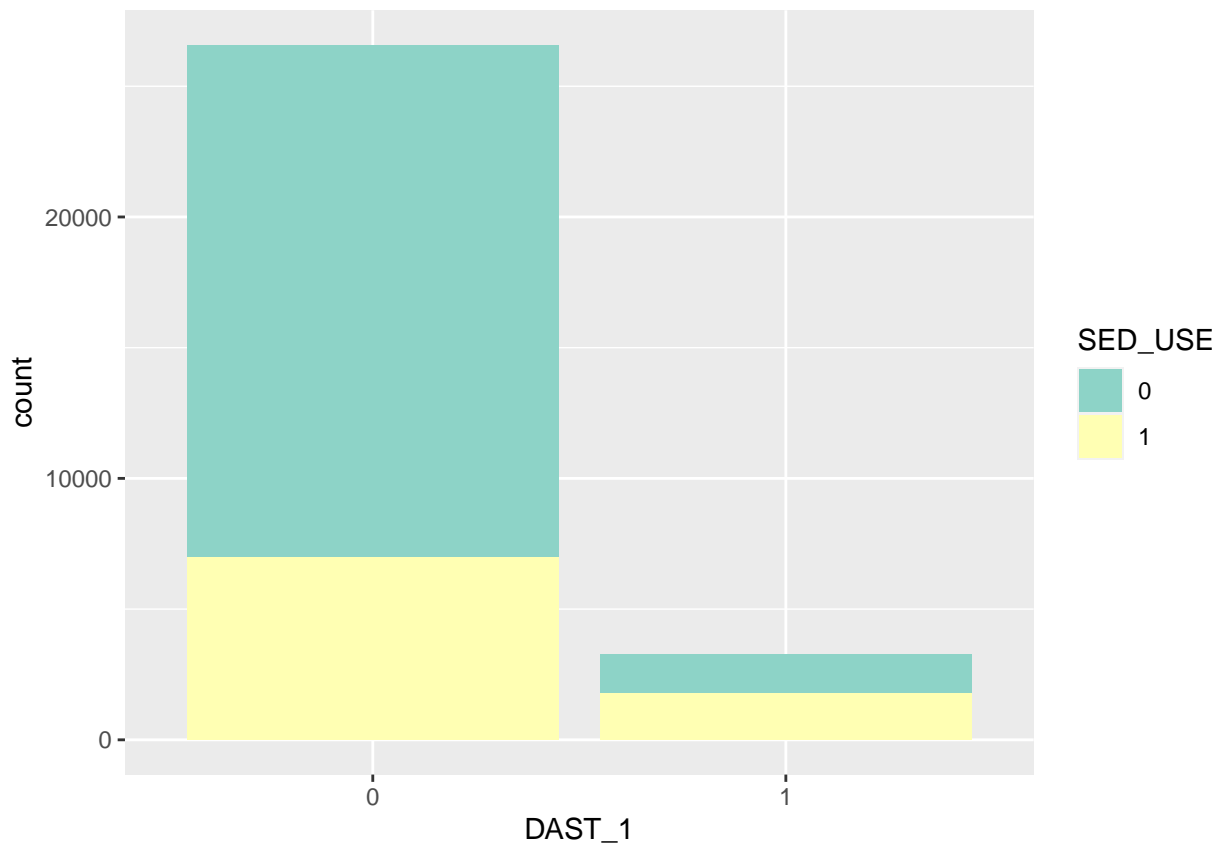
```
ggplot(data = us_19, aes(x = DEM_AGE)) +
  geom_histogram()
```

`stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
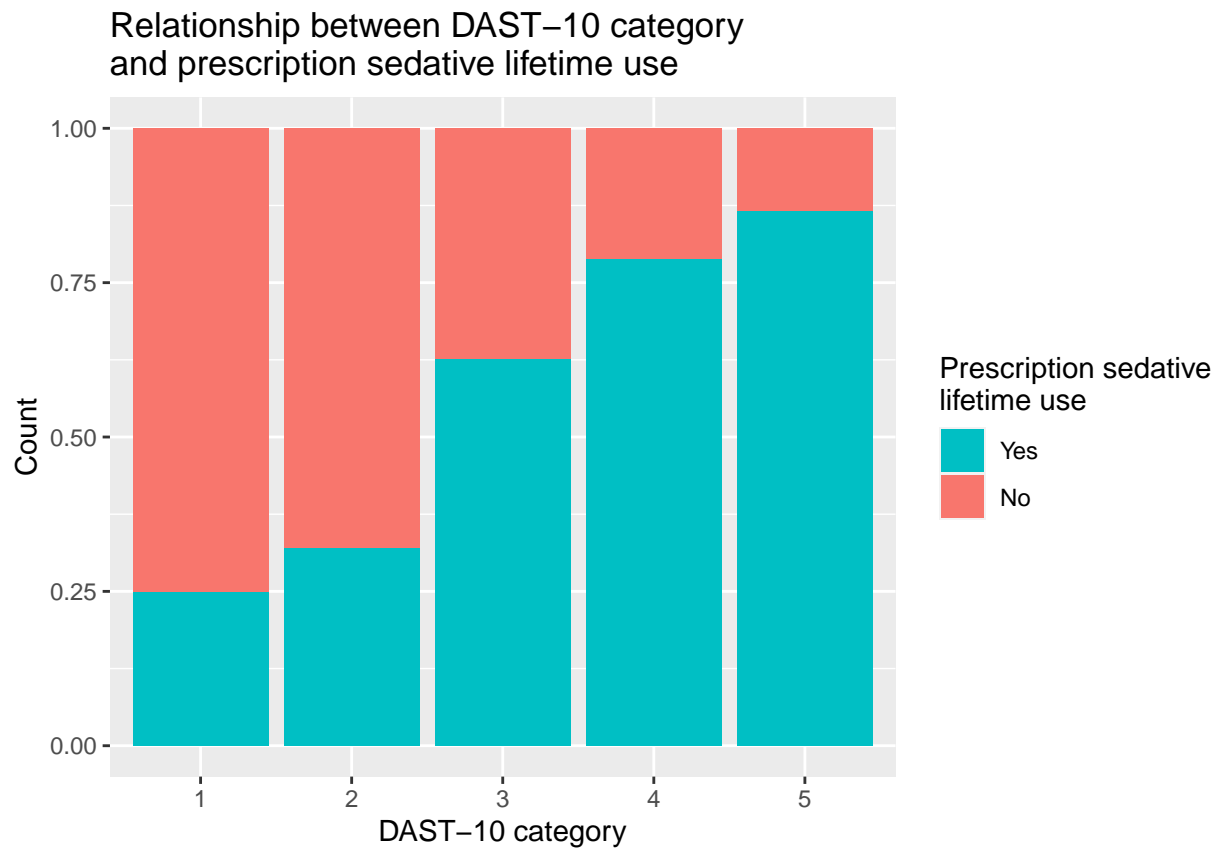
CAN_USE =

```
us_19 %>%
  mutate(SED_USE = as.factor(SED_USE), DAST_1 = as.factor(DAST_1)) %>%
  ggplot(mapping = aes(x = DAST_1, fill = SED_USE)) +
  geom_bar() +
  scale_fill_brewer(palette="Set3")
```

```r
us_19 %>%
  group_by(factor(DAST_1)) %>%
  count(factor(SED_USE)) %>%
  mutate(pct_total = n/sum(n))
```

```
## # A tibble: 4 x 4
## # Groups:   factor(DAST_1) [2]
##   `factor(DAST_1)` `factor(SED_USE)`     n pct_total
##   <fct>            <fct>             <int>     <dbl>
## 1 0                0                 19583     0.737
## 2 0                1                  6994     0.263
## 3 1                0                  1521     0.461
## 4 1                1                  1775     0.539
```

```r
ggplot(data = us_19, mapping = aes(x = as.factor(DAST_CAT), fill = as.factor(SED_USE))) +
  geom_bar(position = "fill") +
  labs(title = "Relationship between DAST-10 category \nand prescription sedative lifetime use",
       x = "DAST-10 category",
       y = "Count") +
  scale_fill_discrete(name = "Prescription sedative \nlifetime use", labels = c("No", "Yes"), guide = gu
```

Relationship between DAST−10 category and prescription sedative lifetime use


```
ggplot(data = us_19, mapping = aes(x = as.factor(DAST_CAT), fill = as.factor(SED_USE))) +
  geom_bar(position = "fill") +
  labs(title = "Relationship between DAST-10 category \nand prescription sedative lifetime use",
       x = "DAST-10 category",
       y = "Count") +
  scale_fill_discrete(name = "Prescription sedative \nlifetime use", labels = c("No", "Yes"), guide = gu
```

Relationship between DAST−10 category and prescription sedative lifetime use