Final Project

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```
all_addiction_data = read_rds("./addiction.rds") |>
  filter(number_of_days_in_treatment >= 0) |>
  drop_na(gender) |>
  drop_na(dropout_yn)
```

```
all_addiction_data
```

```
## # A tibble: 803 x 171
##    record_id   age gender education  number_of_sober_days number_of_days_in_tr~1
##        <dbl> <dbl> <fct>  <fct>                     <dbl>                   <dbl>
##  1        87    41 women  High Scho~                  244                     116
##  2        94    67 men    Bachelor's                   17                      99
##  3        96    28 women  Associate~                    8                      92
##  4        98    50 men    Bachelor's                   24                      93
##  5        99    40 men    Associate~                    6                      57
##  6       104    35 men    Associate~                    7                      59
##  7       108    33 women  Associate~                    3                      87
##  8       109    40 women  Associate~                    7                     102
##  9       111    59 women  High Scho~                    7                      94
## 10       112    39 women  High Scho~                    5                      79
## # i 793 more rows
## # i abbreviated name: 1: number_of_days_in_treatment
## # i 165 more variables: dropout_yn <fct>, SUD.is_Alchohol <fct>,
## #   SUD.is_Opioid <fct>, SUD.is_Cannabis <fct>,
## #   SUD.is_sedative_hypnotic_anxiolytic <fct>, SUD.is_Cocaine <fct>,
## #   SUD.is_Other_stimulant <fct>, SUD.is_Hallucinogen <fct>,
## #   SUD.is_Nicotine <fct>, SUD.is_Inhalant <fct>, ...
```

Overview of what we're working with

Things that can predict

- number of sober days
- days since baseline
- age
- gender
- education
- drop out yes no
- SUD is alcholoc
- SUD is other
- Social support
  - family
  - friends

    - sig other
    - total
- Substance use history
    - Tried tobacco/alcohol
    - Age of first use
    - Regular use
    - Age of regular use
- AA/NA affiliation
    - Lifetime number of meetings
    - Last year number of meetings
    - Degree of affiliation
    - Positive thoughts
    - Negative thoughts
- Stressful life
    - happened
    - witnessed
    - learned about
    - exposed
    - total of all things
- Childhood
- Religion
    - Religious affiliation
    - Positive
    - Negative
- Life quality

Things we can predict

- impression change
- length of stay
- Life quality
- Commitment to change
- Cravings
    - baseline
    - baseline vs followup
- Impression of change

Looking at the basic demographics

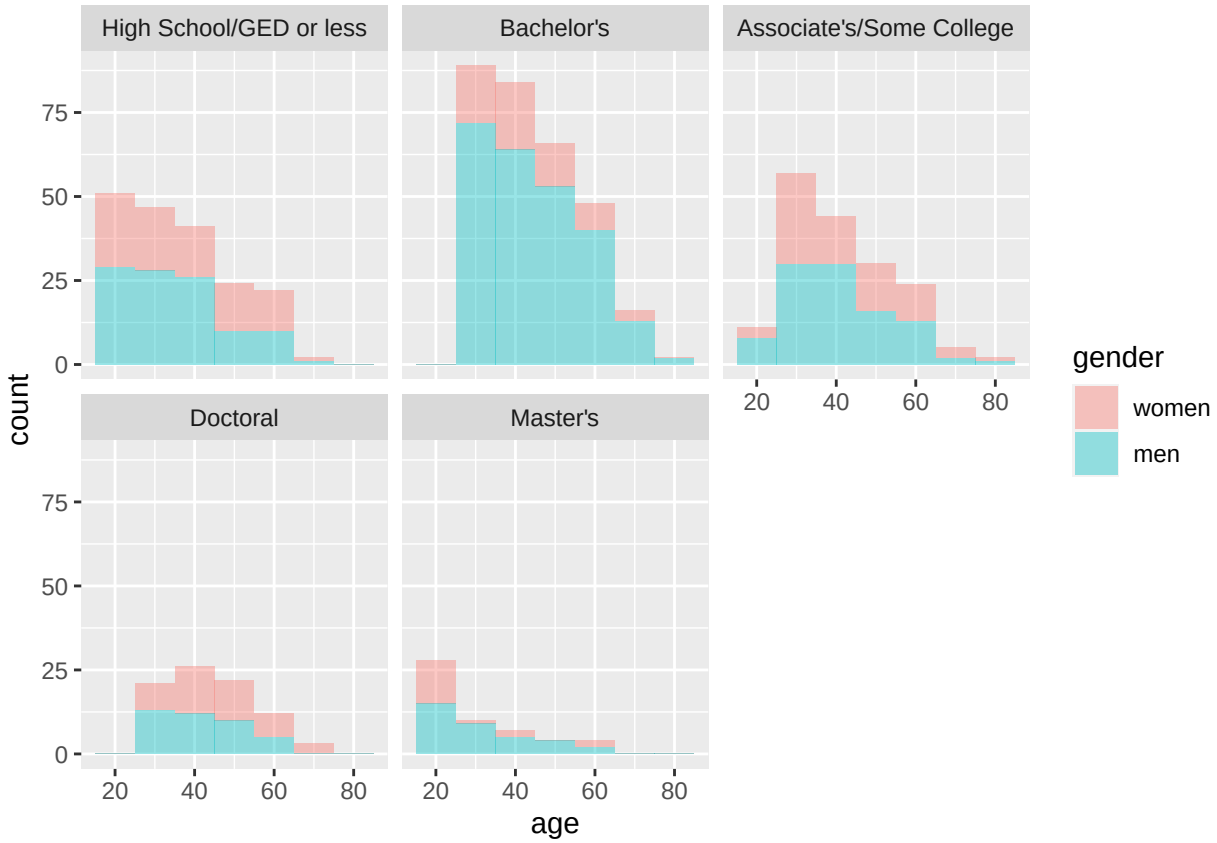
```
ggplot() +
  geom_alluvium()
```

```
all_addiction_data |> ggplot(aes(age,  group=gender, fill=gender)) +
  geom_density(alpha=.4)
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_density()`).
```


```
all_addiction_data |> ggplot(aes(age,  group=gender, fill=gender)) +
  geom_histogram(alpha=0.4, binwidth = 10) +
  facet_wrap(vars(education))
```

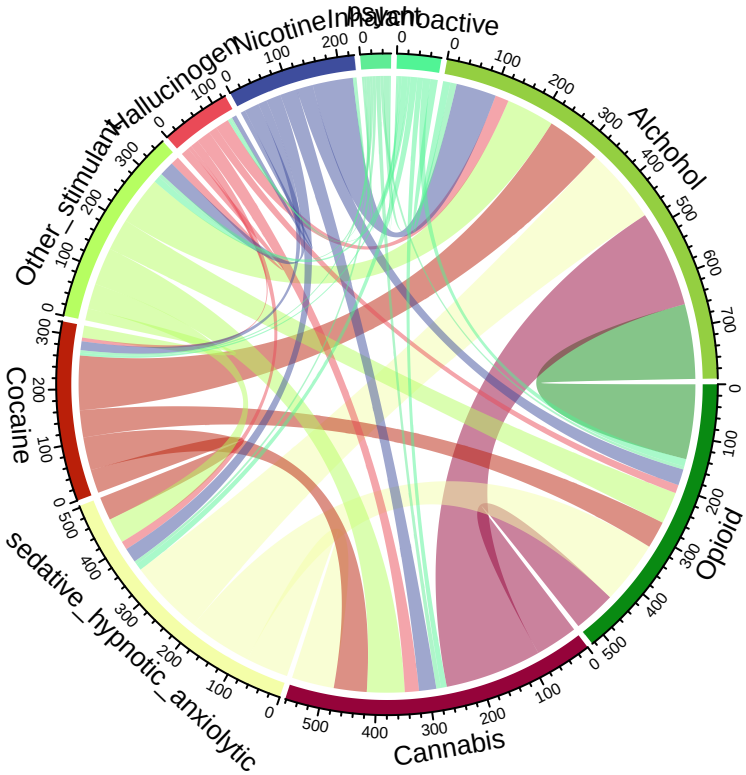
```
## Warning: Removed 1 rows containing non-finite values (`stat_bin()`).
```




```r
# # Function to calculate co-occurrences
# co_occurrence <- function(df) {
#   n <- ncol(df)
#   mat <- matrix(0, n, n, dimnames = list(colnames(df), colnames(df)))
#
#   for (i in 1:n) {
#     for (j in i:n) {
#       if (i == j) {
#         mat[i, j] <- sum(df[[i]] == 1)
#       } else {
#         mat[i, j] <- sum(df[[i]] == 1 & df[[j]] == 1)
#         mat[j, i] <- mat[i, j]  # Symmetric matrix
#       }
#     }
#   }
#   mat
# }

co_occurrence_modified <- function(df) {
  n <- ncol(df)
  mat <- matrix(0, n, n, dimnames = list(colnames(df), colnames(df)))

  for (i in 1:(n-1)) {  # Adjust loop to stop before the last column
    for (j in (i+1):n) {  # Start from the next column to avoid repeats and self-comparison
      # Calculate co-occurrence only for unique pairs (i != j)
      mat[i, j] <- sum(df[[i]] == 1 & df[[j]] == 1)
```

```
      mat[j, i] <- mat[i, j]  # Ensure the matrix is symmetric
    }
  }

  # Ensure diagonal and any revisited pairs are set to zero
  # This step is somewhat redundant with the above control but ensures no self-pair counts
  diag(mat) <- 0

  mat
}

# Create the matrix
matrix_for_chord <- all_addiction_data |>
  select(starts_with("SUD")) |>
  select(-ends_with("sum")) |>
  rename_all(~stringr::str_replace(., "SUD.is_", "")) |>
  co_occurrence_modified()

matrix_for_chord[upper.tri(matrix_for_chord)] <- 0
```

```
chordDiagram(matrix_for_chord)
```

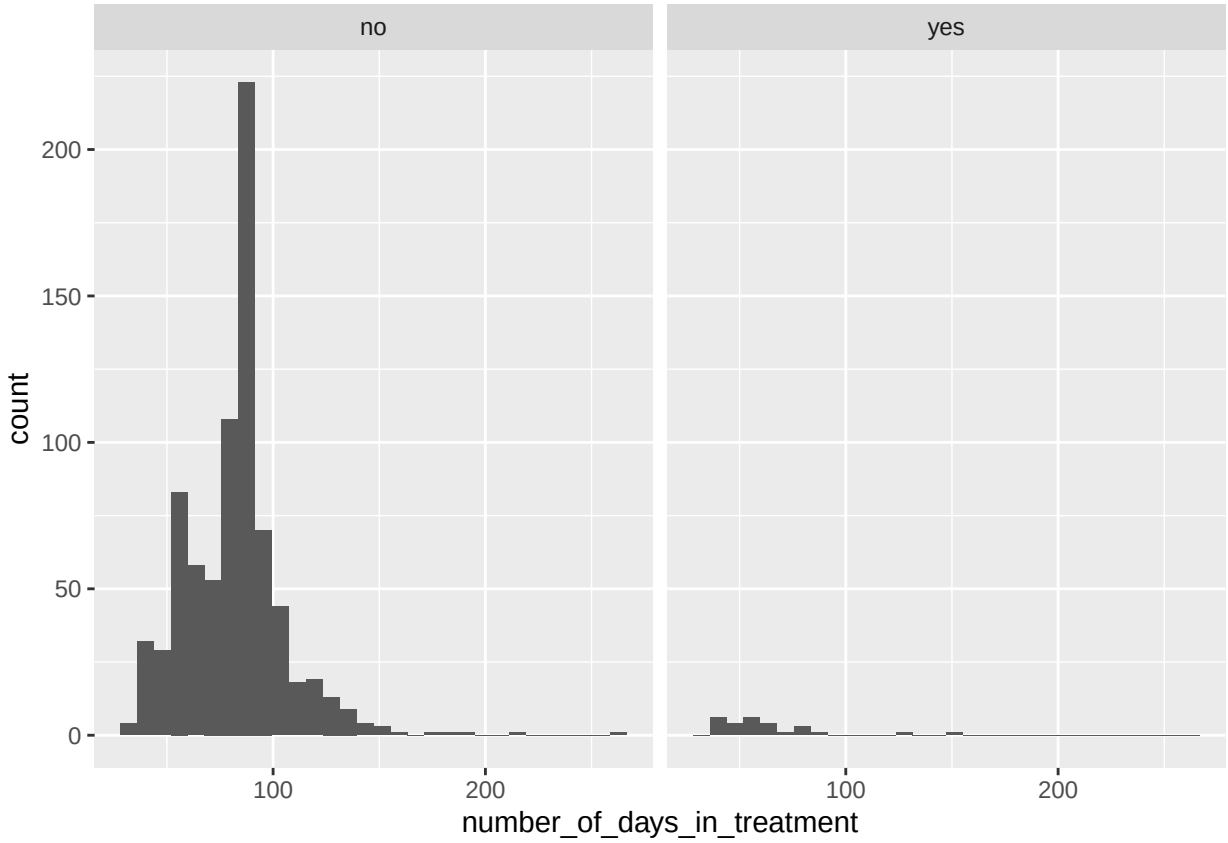



```
install.packages("ggalluvial")
```

```
## Warning: package 'ggalluvial' is in use and will not be installed
```

```
all_addiction_data |> ggplot(aes(number_of_days_in_treatment)) +
  geom_histogram() +
  facet_wrap(vars(dropout_yn))
```

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




```
filtered_alcohol_data <- all_addiction_data |>
  # Getting only the people that are addicted to alcohol
  filter(SUD.is_Alchohol == 1) |>
  filter(SUD.is_sum == 1)

filtered_alcohol_data
```

```
## # A tibble: 234 x 171
##    record_id   age gender education  number_of_sober_days number_of_days_in_tr~1
##        <dbl> <dbl> <fct>  <fct>                     <dbl>                  <dbl>
##  1        96    28 women  Associate~                    8                     92
##  2        98    50 men    Bachelor's                   24                     93
##  3        99    40 men    Associate~                    6                     57
##  4       109    40 women  Associate~                    7                    102
##  5       150    49 men    High Scho~                   14                     64
##  6       153    68 women  Associate~                    6                     74
##  7       154    55 men    Bachelor's                    4                     78
##  8       155    50 women  Bachelor's                   13                     99
##  9       178    69 women  High Scho~                   12                     85
## 10       180    72 women  Bachelor's                    7                     58
## # i 224 more rows
```

```
## # i abbreviated name: 1: number_of_days_in_treatment
## # i 165 more variables: dropout_yn <fct>, SUD.is_Alchohol <fct>,
## #   SUD.is_Opioid <fct>, SUD.is_Cannabis <fct>,
## #   SUD.is_sedative_hypnotic_anxiolytic <fct>, SUD.is_Cocaine <fct>,
## #   SUD.is_Other_stimulant <fct>, SUD.is_Hallucinogen <fct>,
## #   SUD.is_Nicotine <fct>, SUD.is_Inhalant <fct>, ...
```

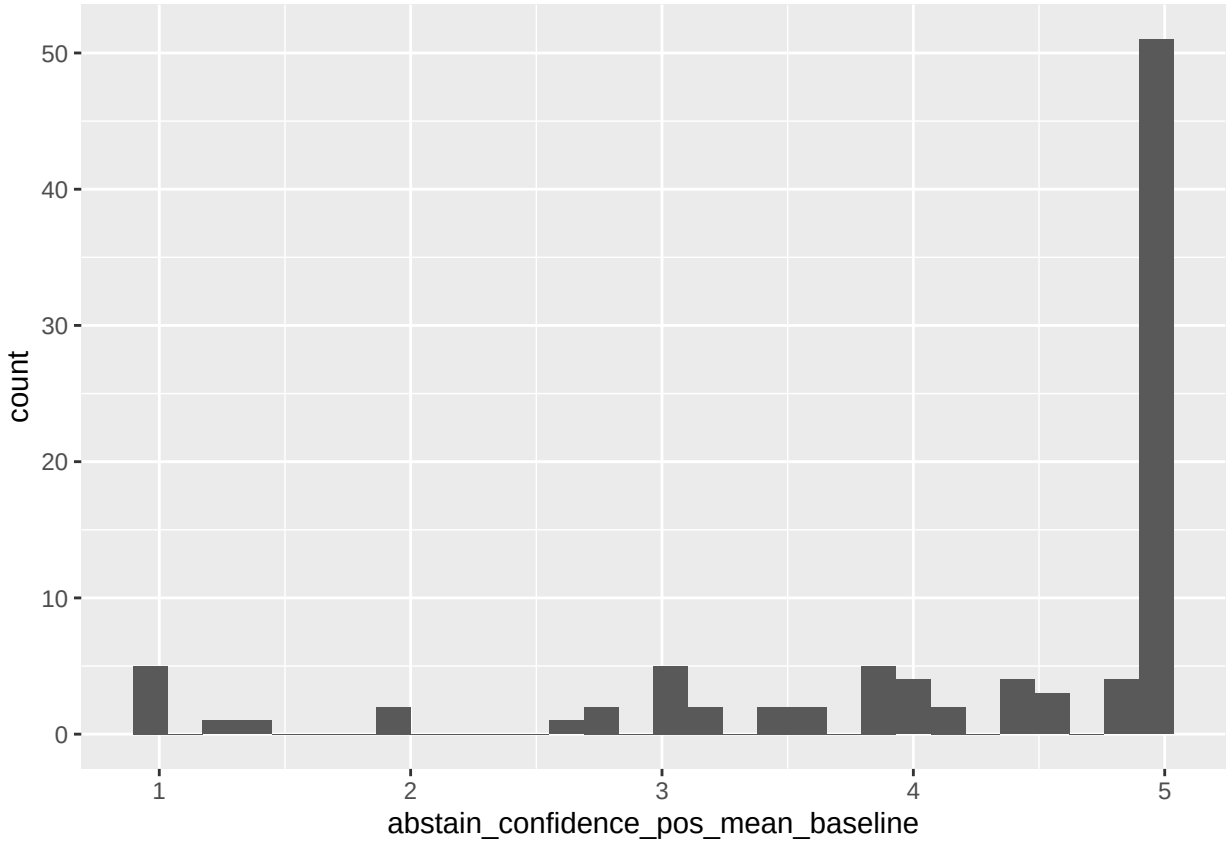
```
filtered_cocaine_data <- all_addiction_data |>
  # Getting only the people that are addicted to alcohol
  filter(SUD.is_Cocaine == 1)

filtered_cocaine_data
```

```
## # A tibble: 130 x 171
##    record_id   age gender education  number_of_sober_days number_of_days_in_tr~1
##        <dbl> <dbl> <fct>  <fct>                     <dbl>                  <dbl>
##  1       114    42 men    Associate~                    5                     85
##  2       164    45 men    Bachelor's                    4                     82
##  3       175    35 women  High Scho~                    1                     87
##  4       176    31 men    Associate~                    5                     57
##  5       189    21 women  High Scho~                    6                     86
##  6       194    21 women  High Scho~                    8                     89
##  7       212    46 men    Bachelor's                   23                     57
##  8       260    24 women  High Scho~                    1                     57
##  9       272    41 men    Master's                     12                     58
## 10       273    22 women  High Scho~                    6                    132
## # i 120 more rows
## # i abbreviated name: 1: number_of_days_in_treatment
## # i 165 more variables: dropout_yn <fct>, SUD.is_Alchohol <fct>,
## #   SUD.is_Opioid <fct>, SUD.is_Cannabis <fct>,
## #   SUD.is_sedative_hypnotic_anxiolytic <fct>, SUD.is_Cocaine <fct>,
## #   SUD.is_Other_stimulant <fct>, SUD.is_Hallucinogen <fct>,
## #   SUD.is_Nicotine <fct>, SUD.is_Inhalant <fct>, ...
```

```
filtered_alcohol_data |> ggplot(aes(abstain_confidence_pos_mean_baseline)) +
  geom_histogram()
```

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

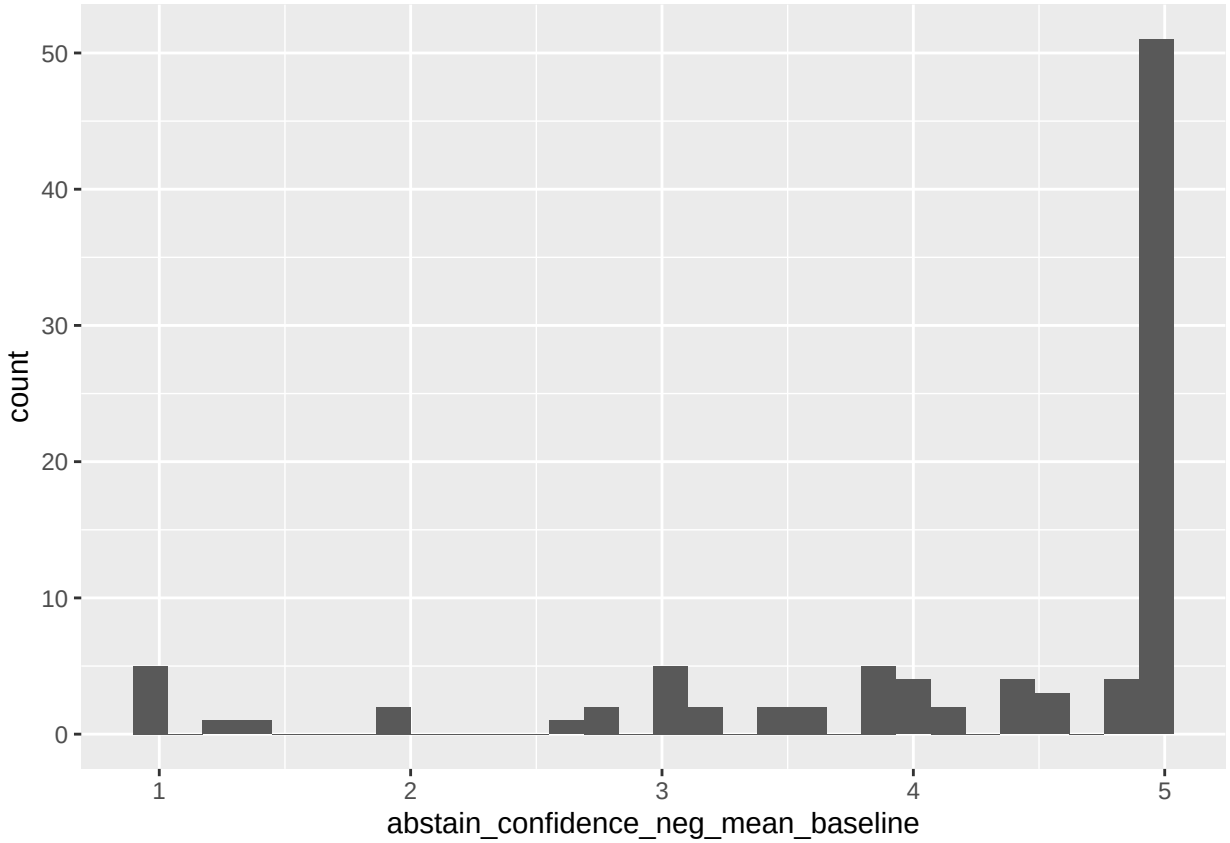
```
## Warning: Removed 138 rows containing non-finite values (`stat_bin()`).
```




```
filtered_alcohol_data |> ggplot(aes(abstain_confidence_neg_mean_baseline)) +
  geom_histogram()
```

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

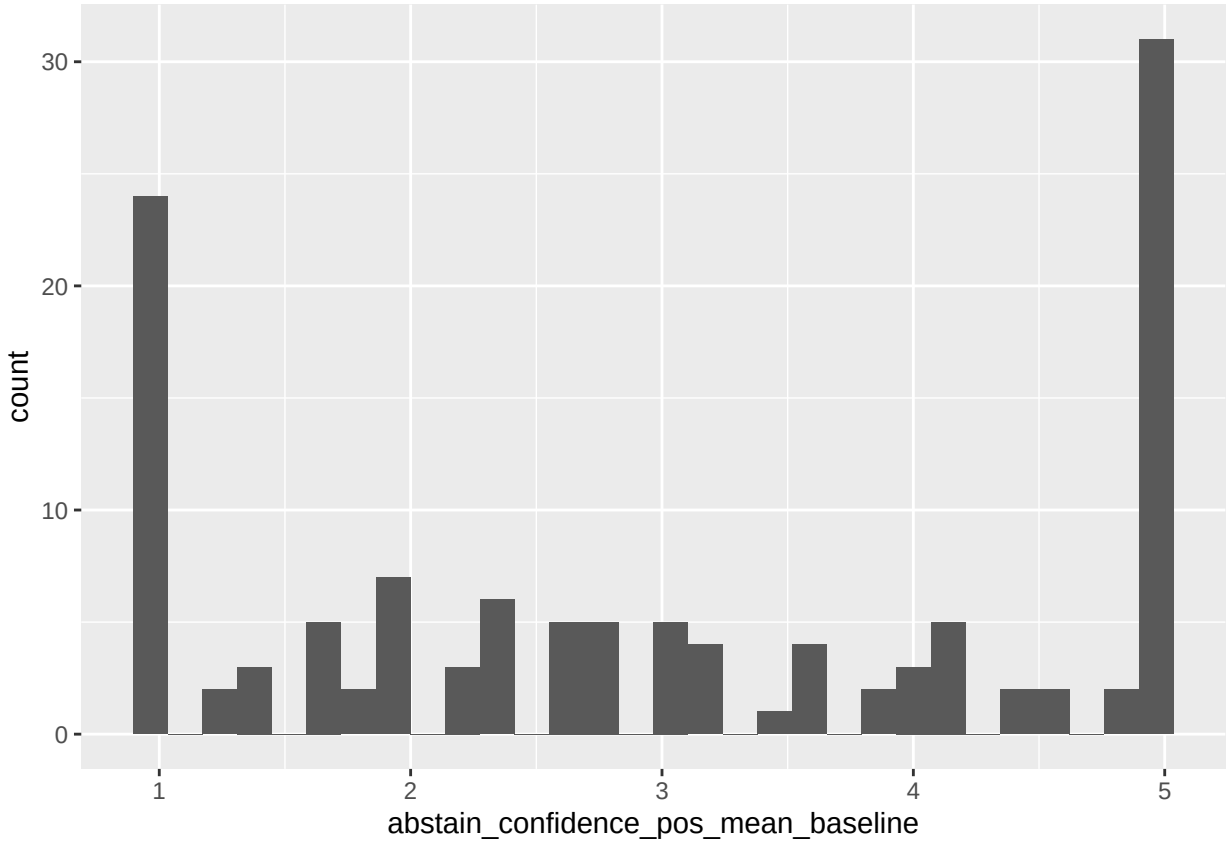
```
## Warning: Removed 138 rows containing non-finite values (`stat_bin()`).
```




```
filtered_cocaine_data |> ggplot(aes(abstain_confidence_pos_mean_baseline)) +
  geom_histogram()
```

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

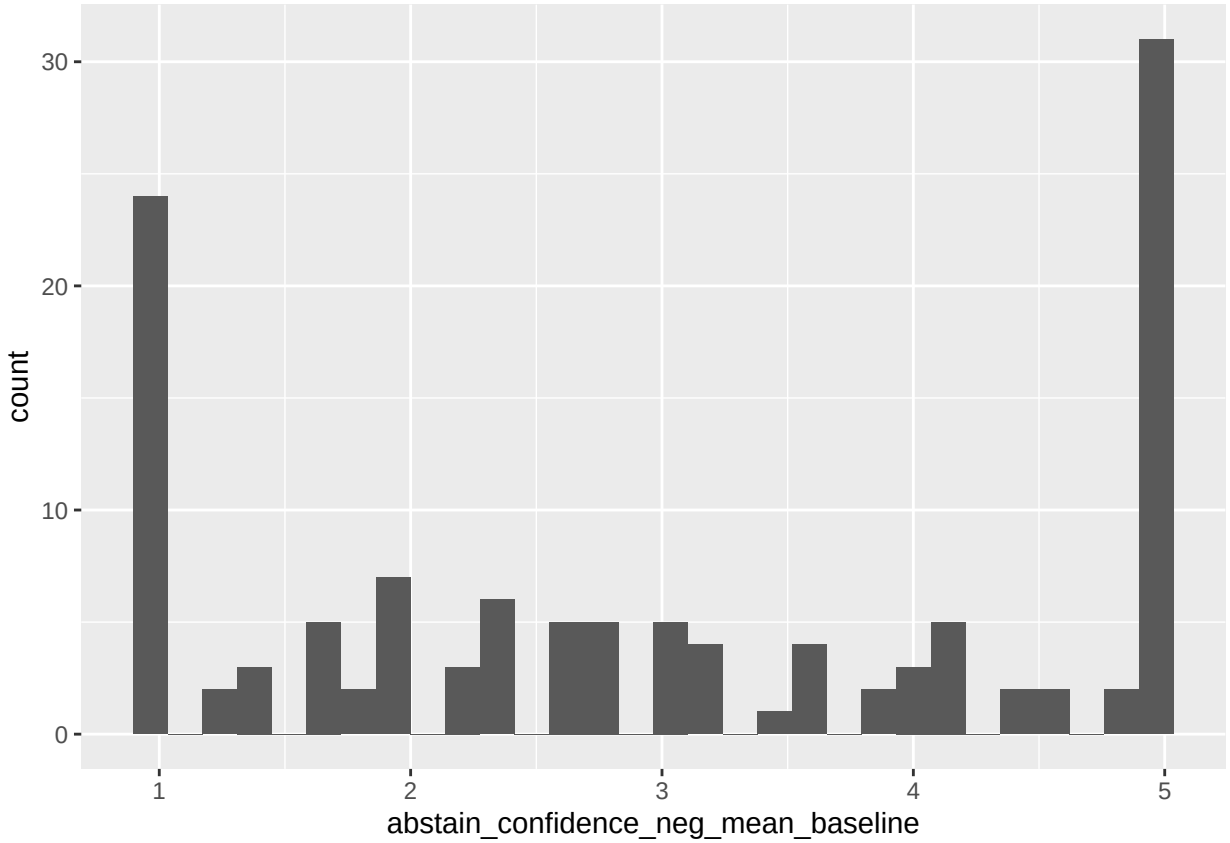
```
## Warning: Removed 7 rows containing non-finite values (`stat_bin()`).
```




```
filtered_cocaine_data |> ggplot(aes(abstain_confidence_neg_mean_baseline)) +
  geom_histogram()
```

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

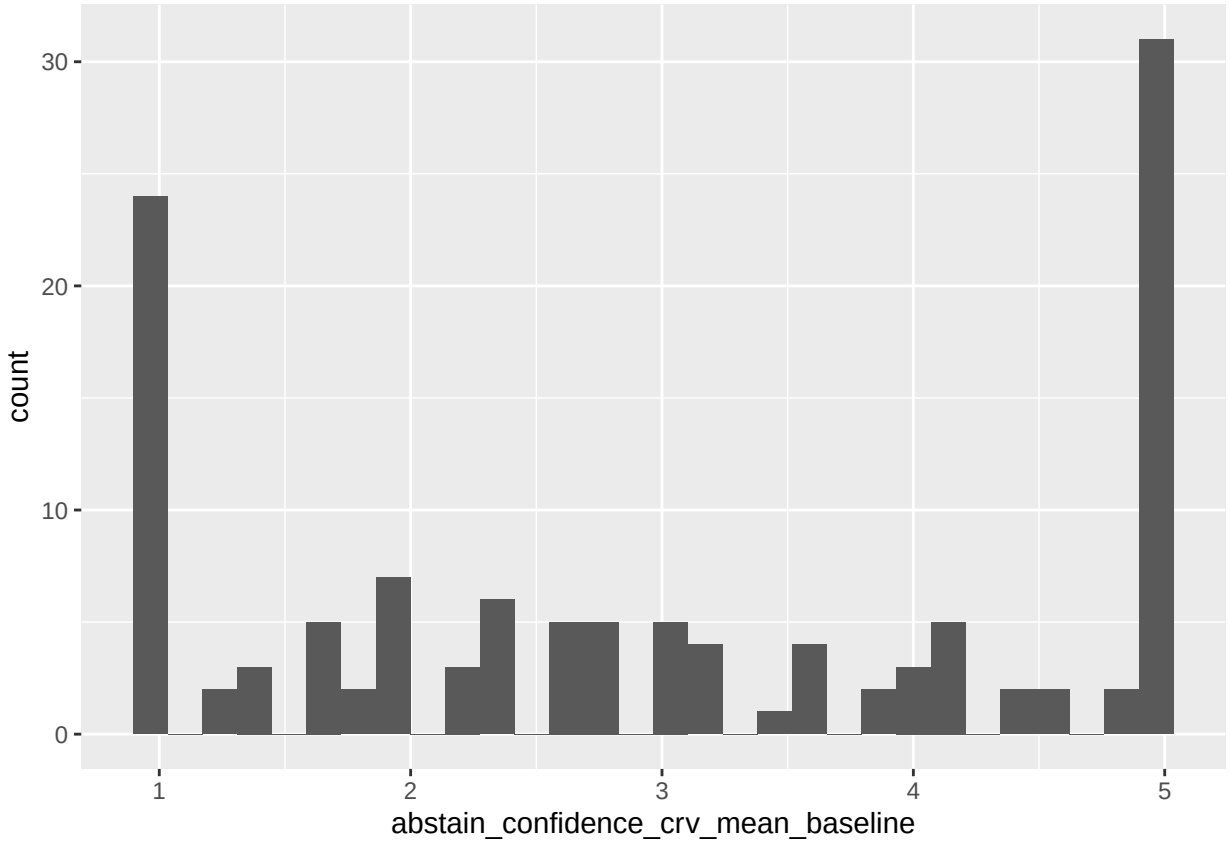
```
## Warning: Removed 7 rows containing non-finite values (`stat_bin()`).
```




```
filtered_cocaine_data |> ggplot(aes(abstain_confidence_crv_mean_baseline)) +
  geom_histogram()
```

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

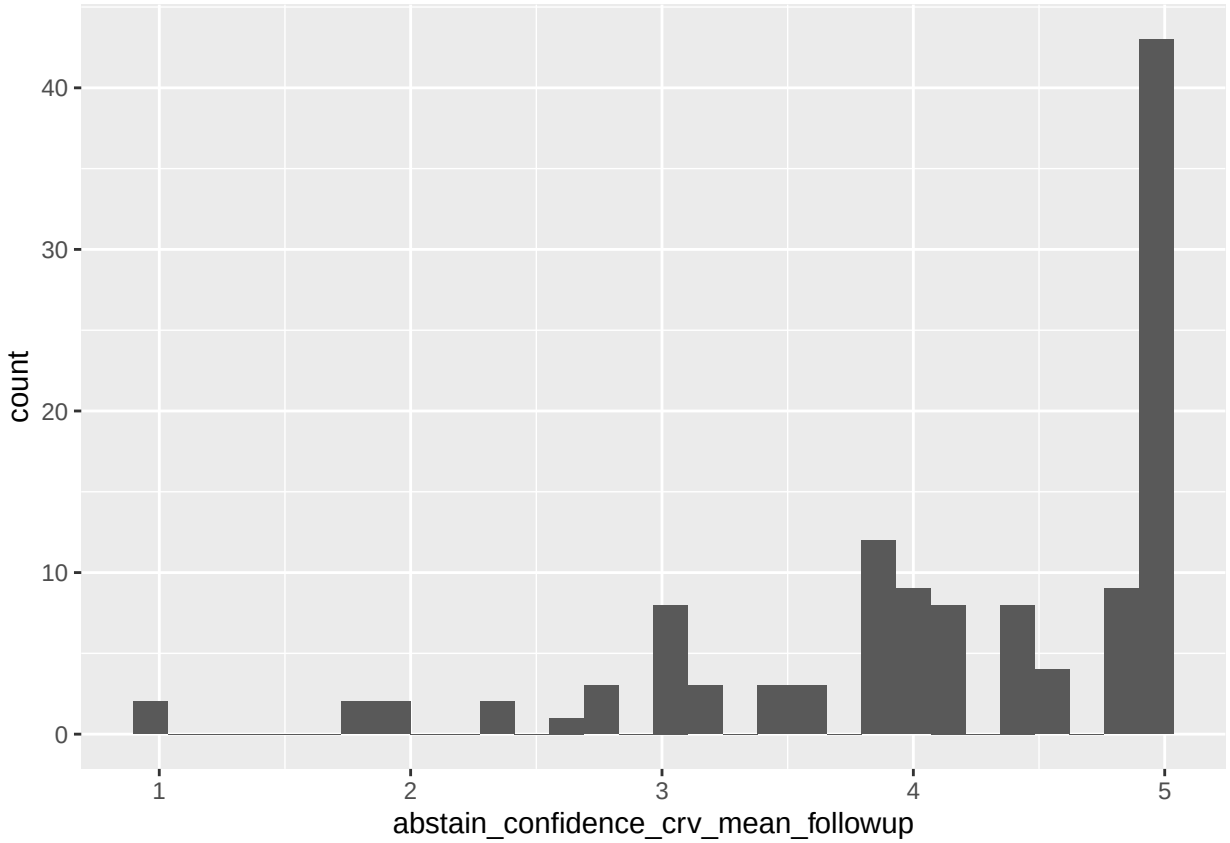
```
## Warning: Removed 7 rows containing non-finite values (`stat_bin()`).
```




```
filtered_cocaine_data |> ggplot(aes(abstain_confidence_crv_mean_followup)) +
  geom_histogram()
```

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

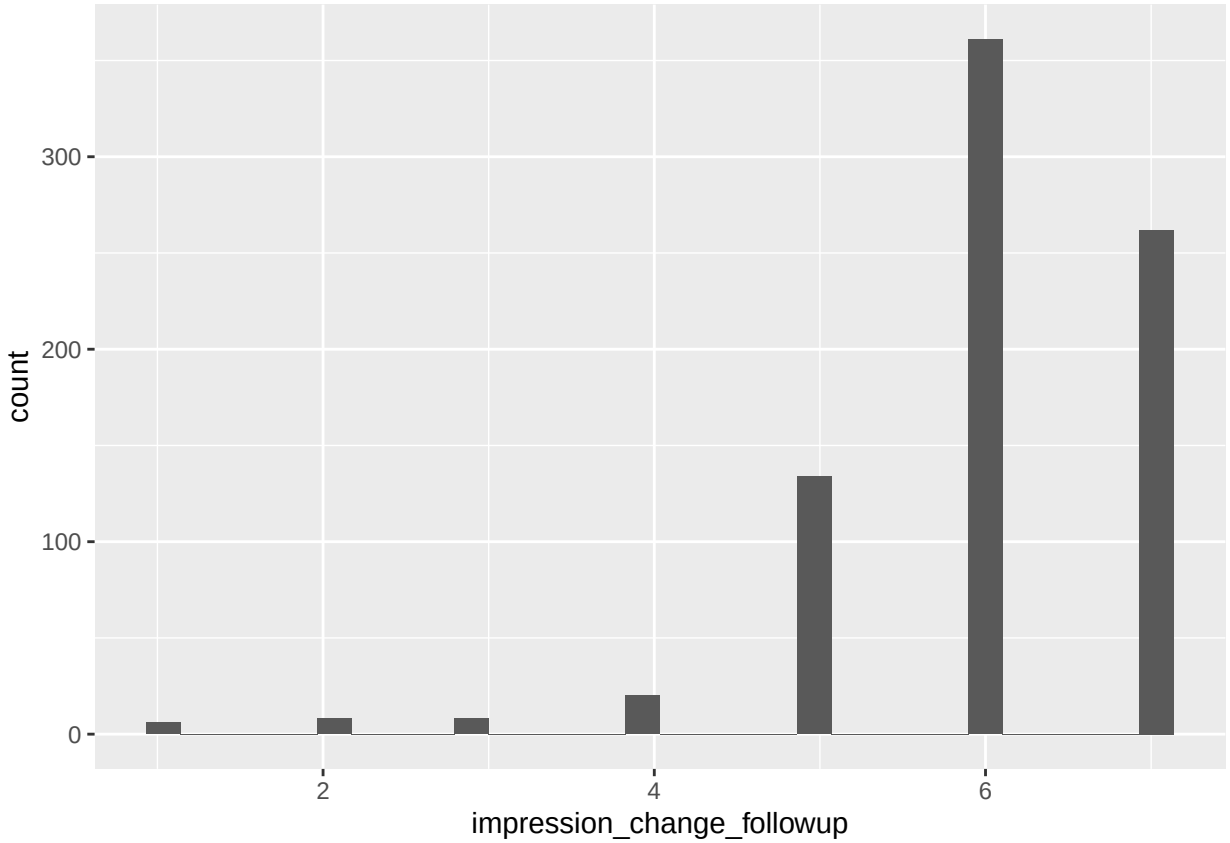
```
## Warning: Removed 8 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(impression_change_followup)) +
  geom_histogram()
```

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

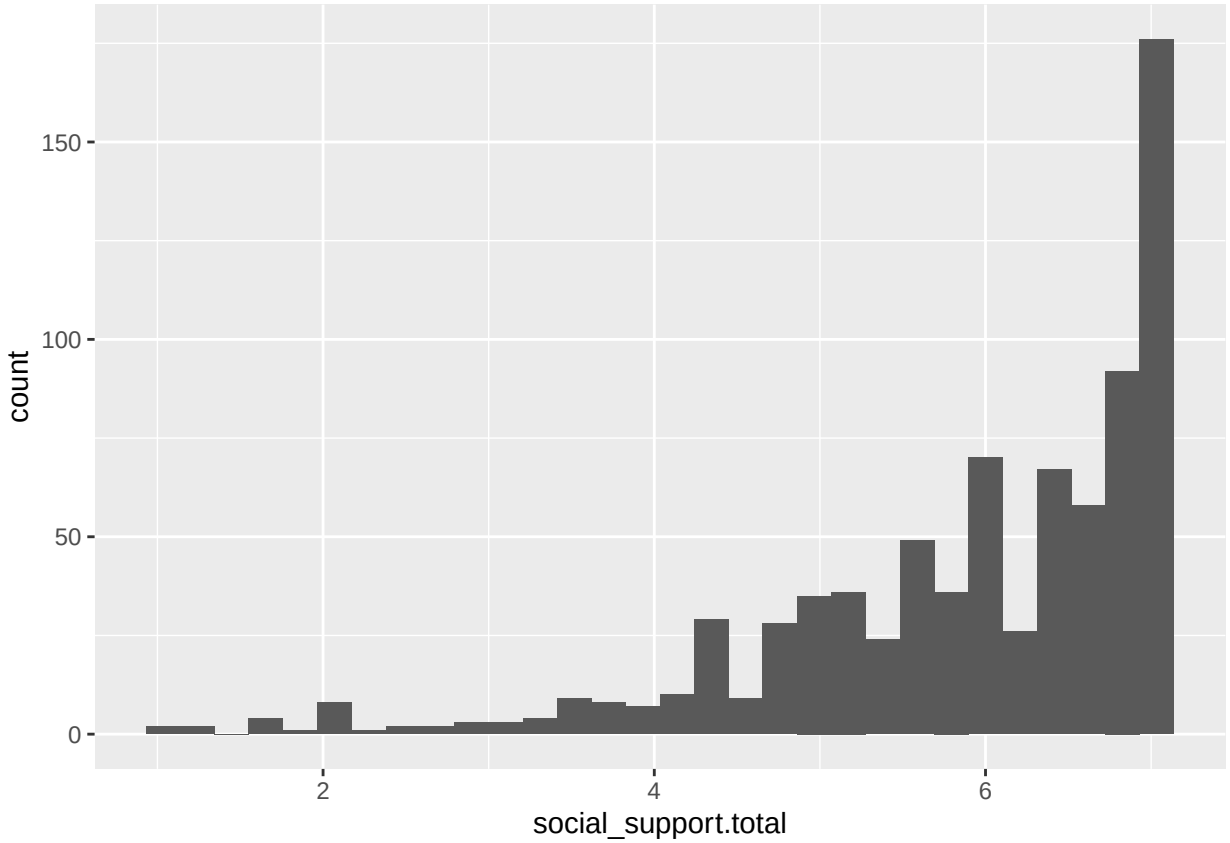
```
## Warning: Removed 4 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(social_support.total)) +
  geom_histogram()
```

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

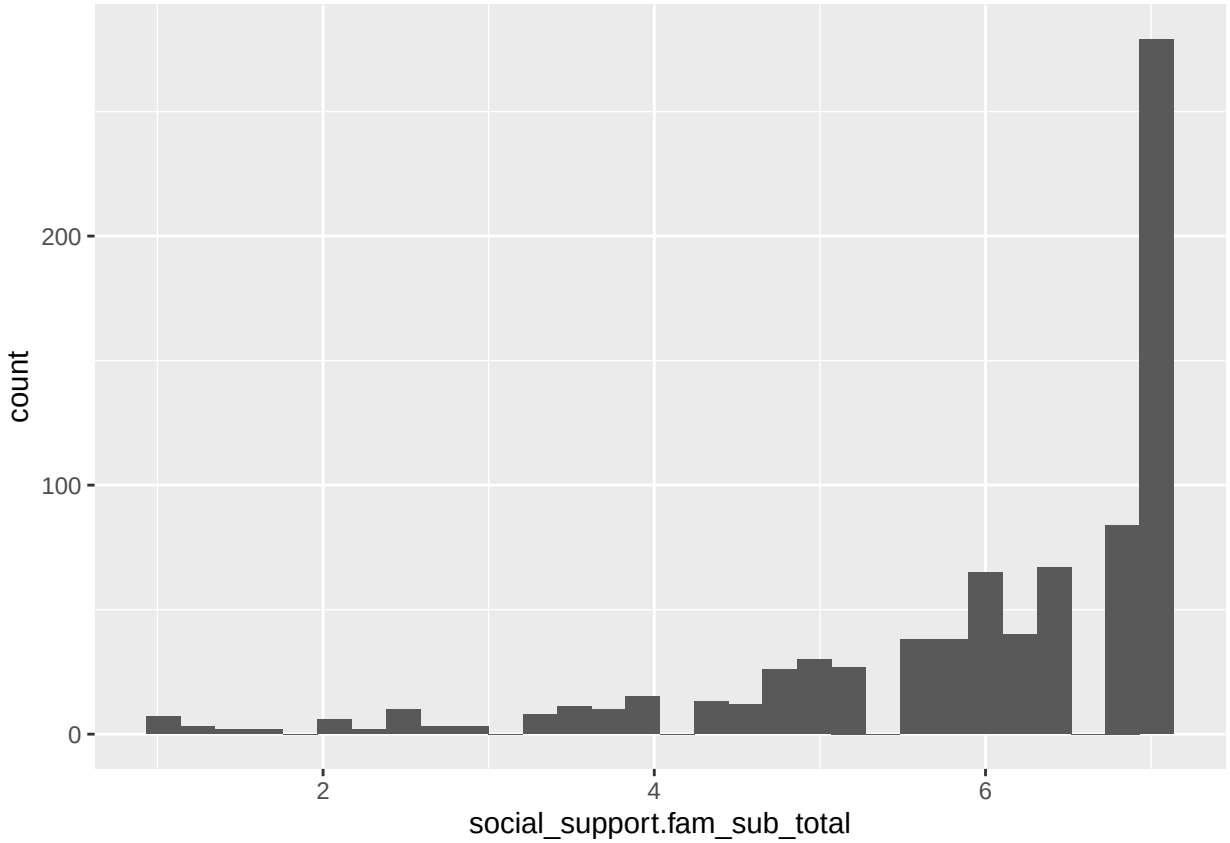
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(social_support.fam_sub_total)) +
  geom_histogram()
```

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

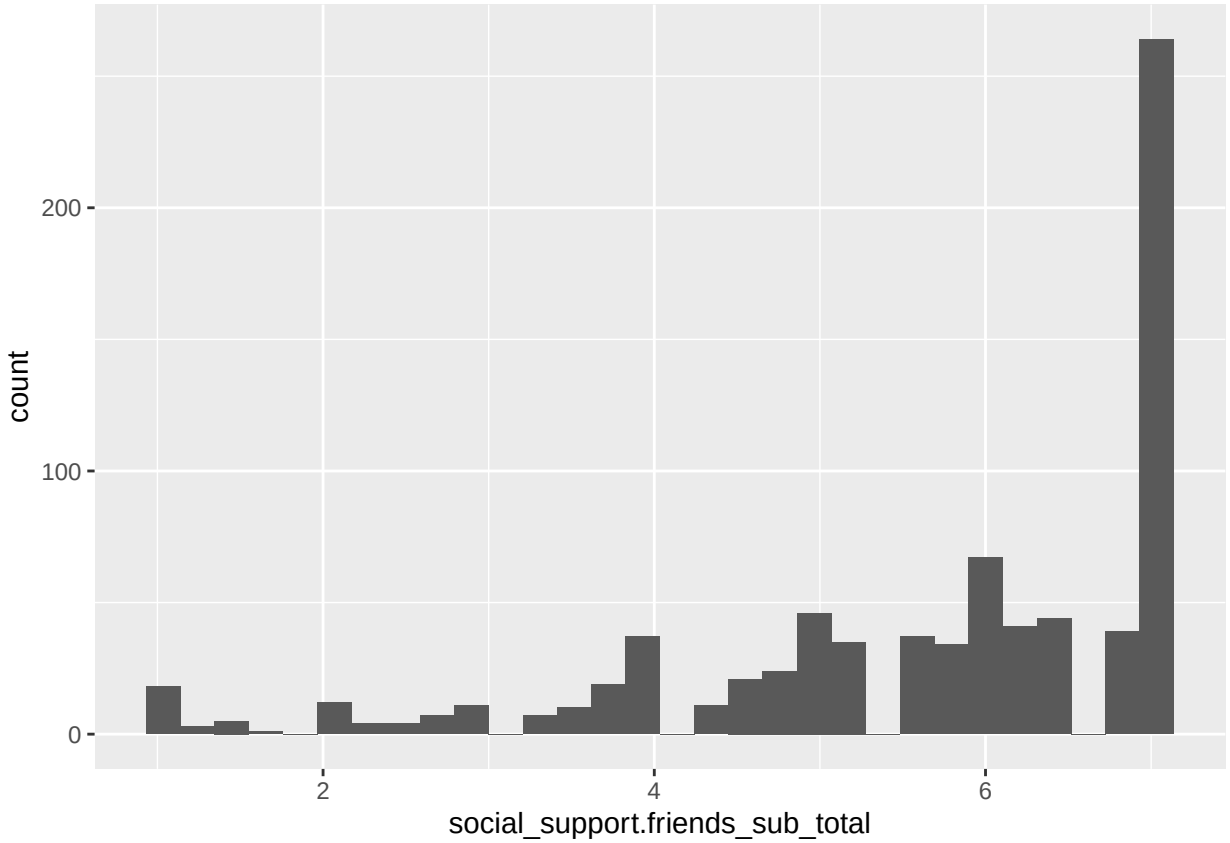
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(social_support.friends_sub_total)) +
  geom_histogram()
```

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

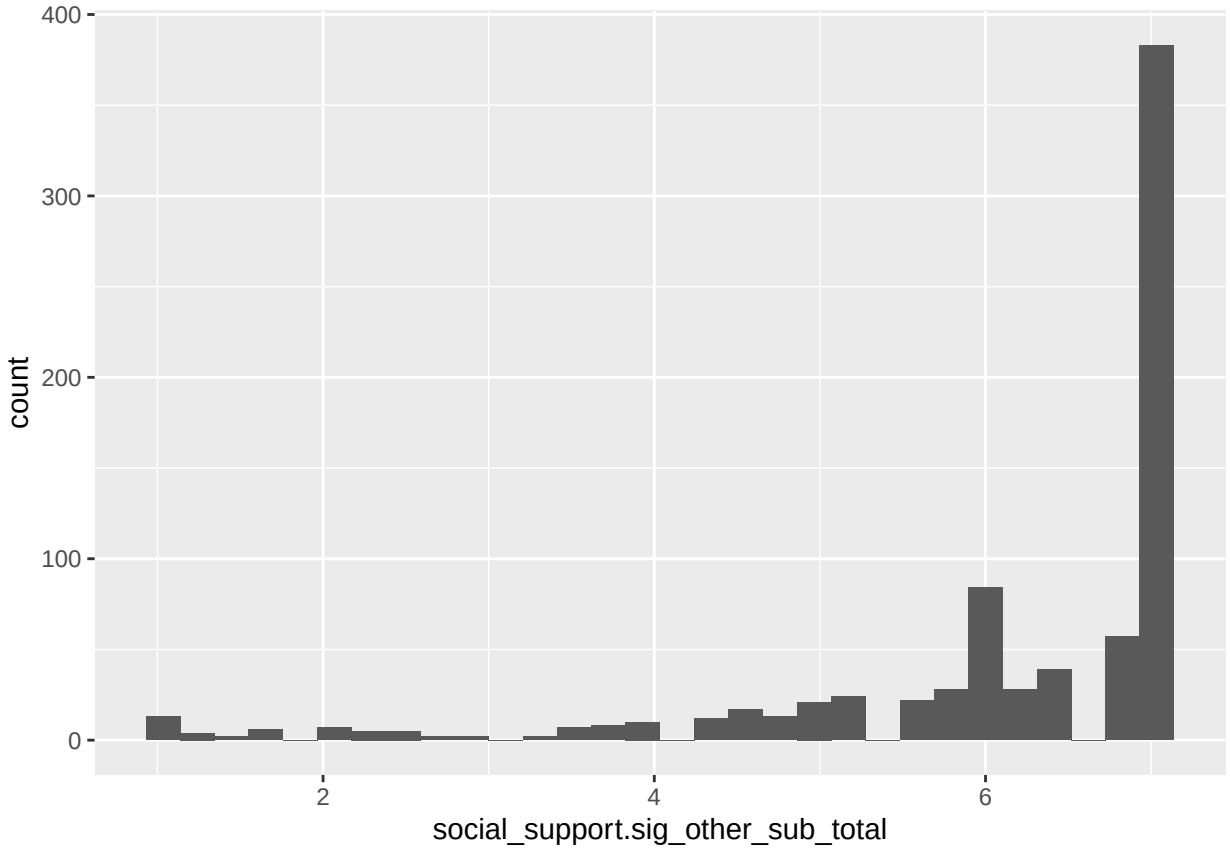
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(social_support.sig_other_sub_total)) +
  geom_histogram()
```

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

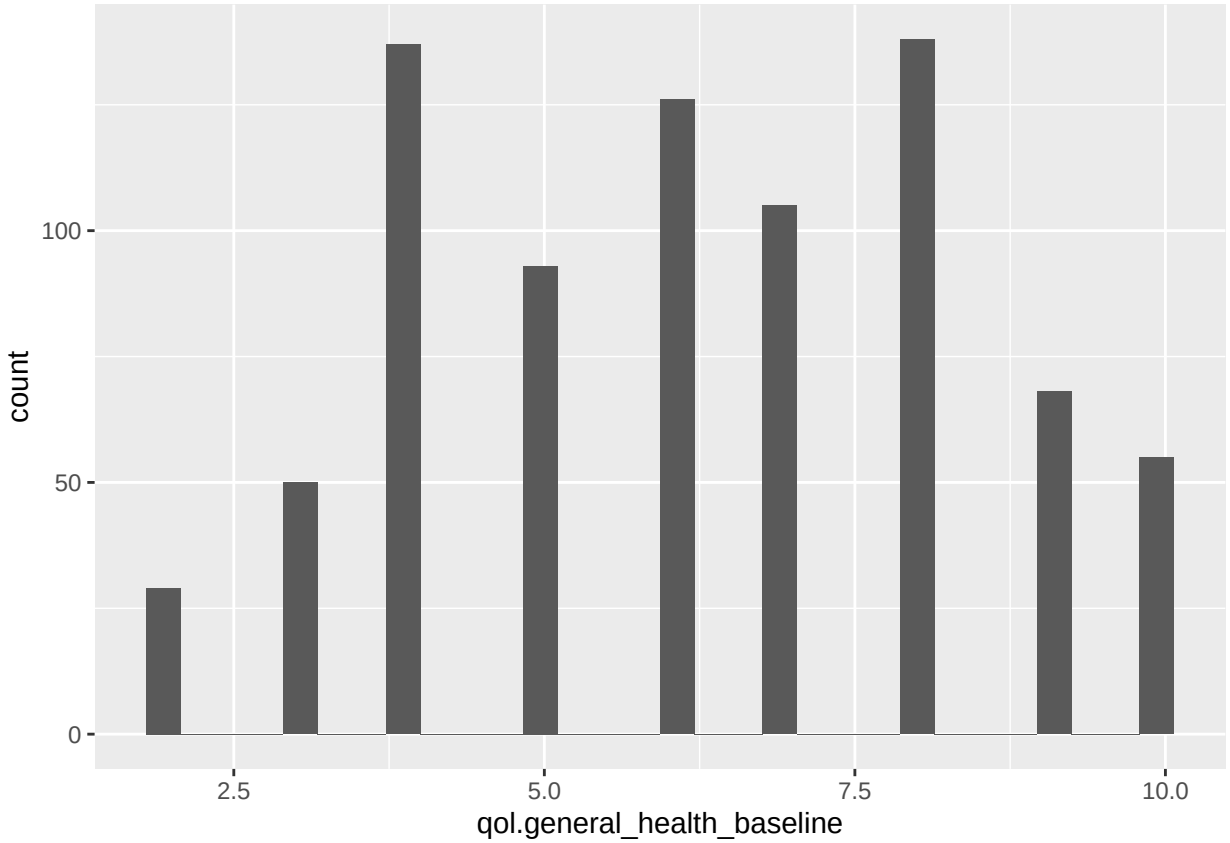
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(qol.general_health_baseline)) +
  geom_histogram()
```

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

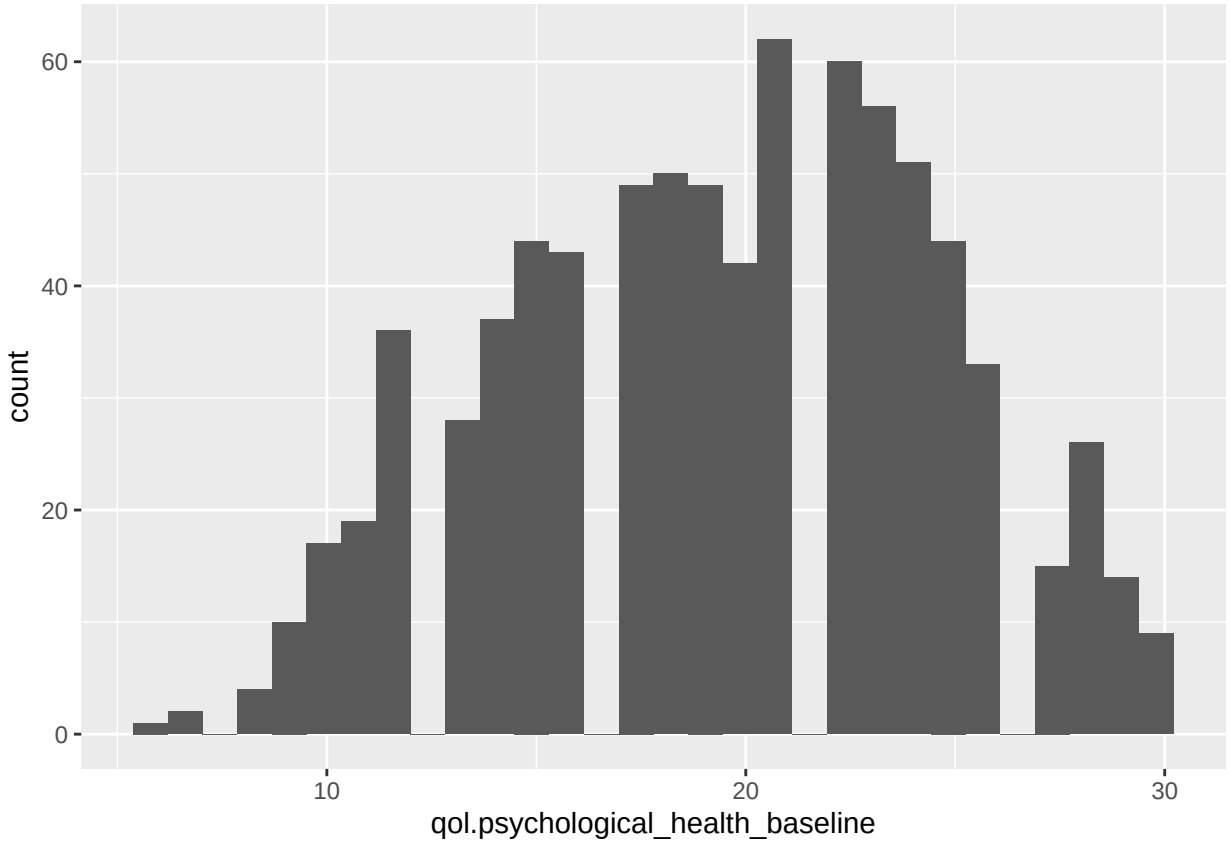
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(qol.psychological_health_baseline)) +
  geom_histogram()
```

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

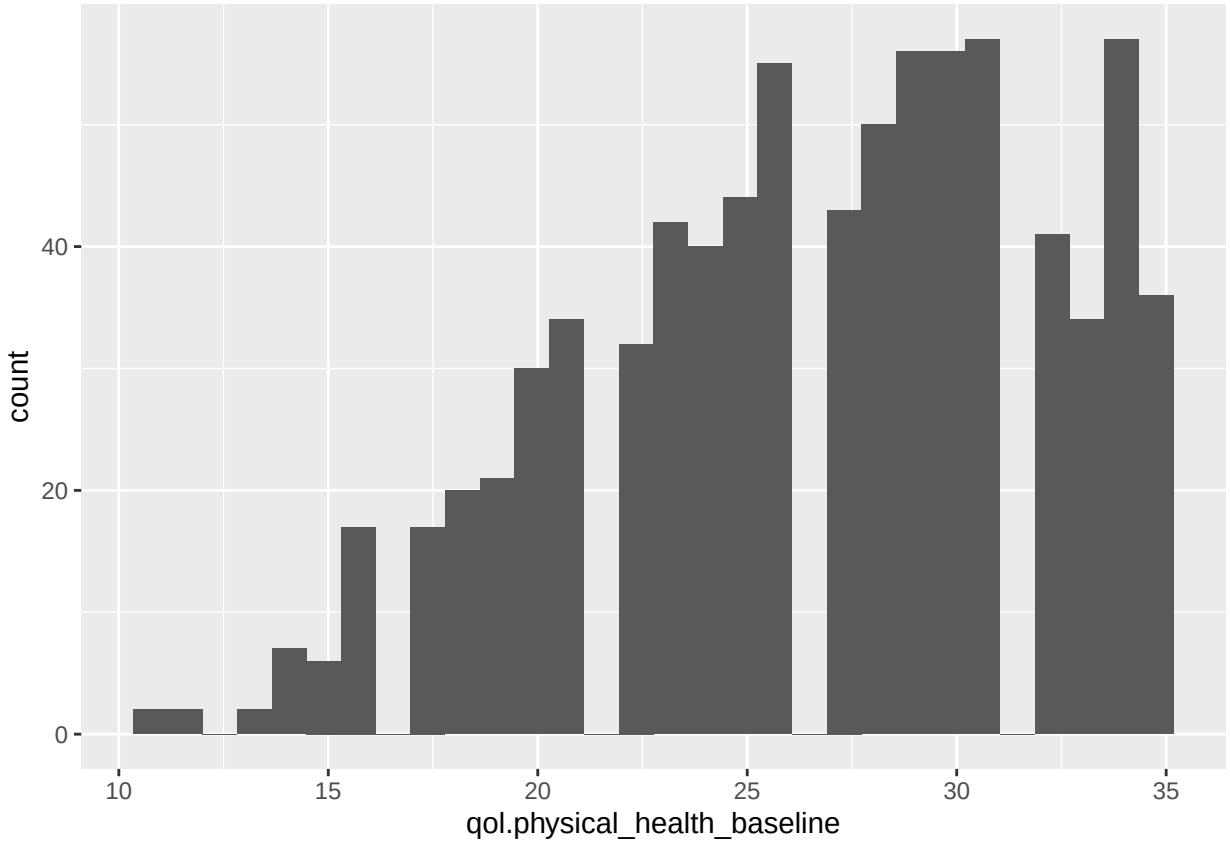
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(qol.physical_health_baseline)) +
  geom_histogram()
```

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

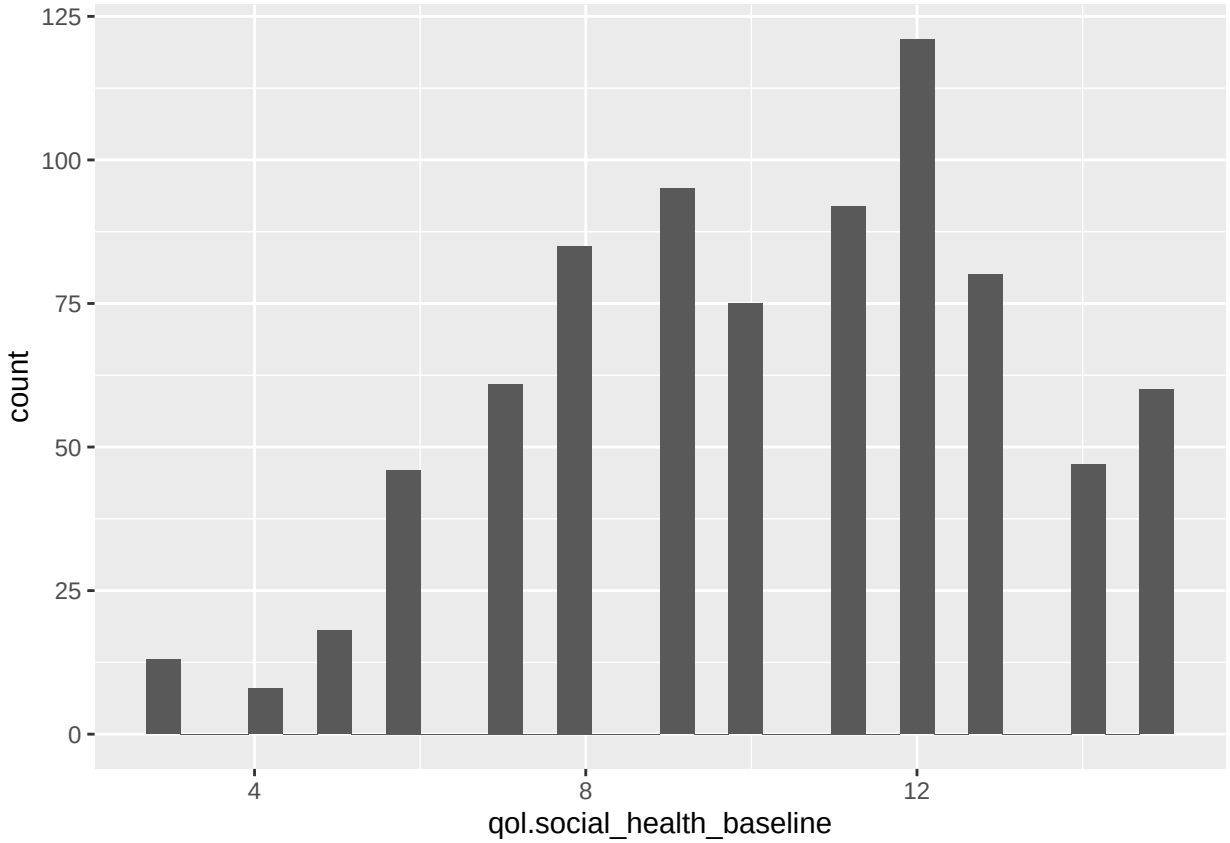
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(qol.social_health_baseline)) +
  geom_histogram()
```

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

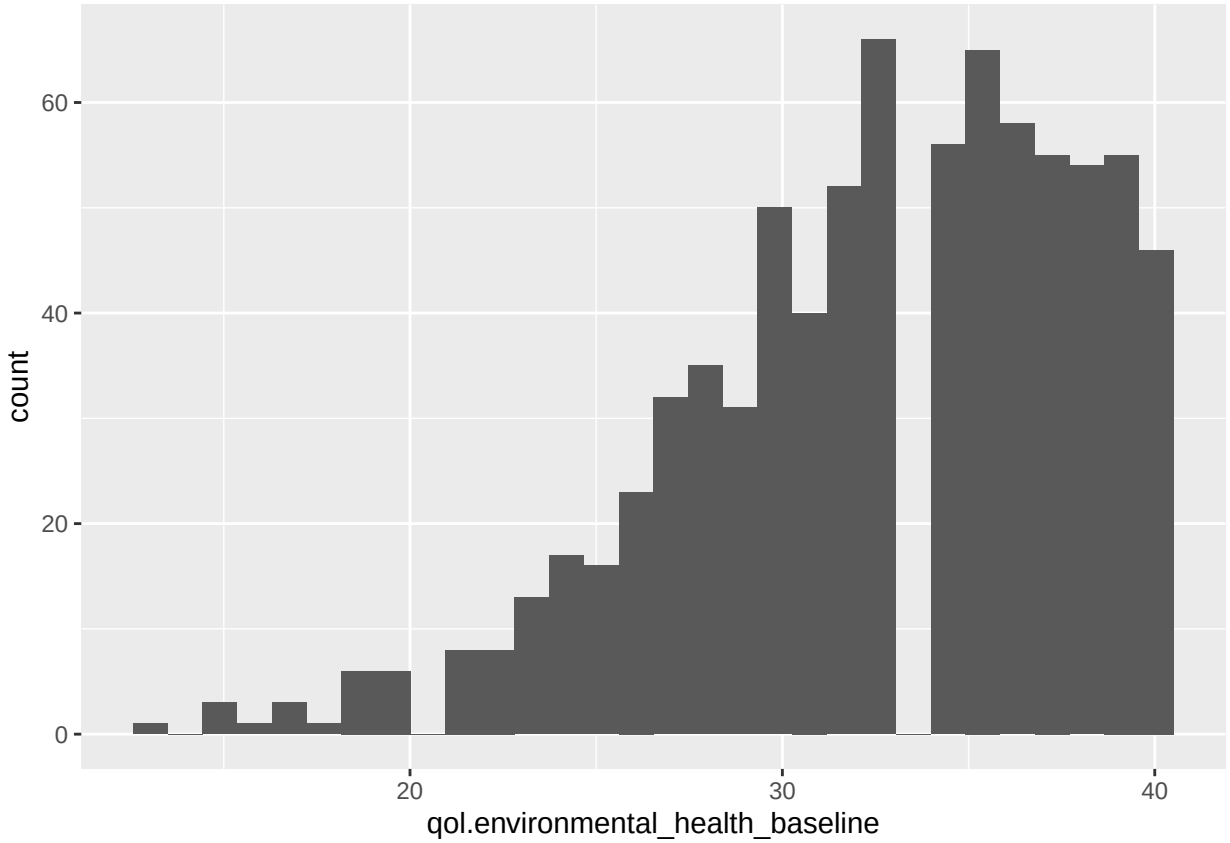
```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```




```
all_addiction_data |> ggplot(aes(qol.environmental_health_baseline)) +
  geom_histogram()
```

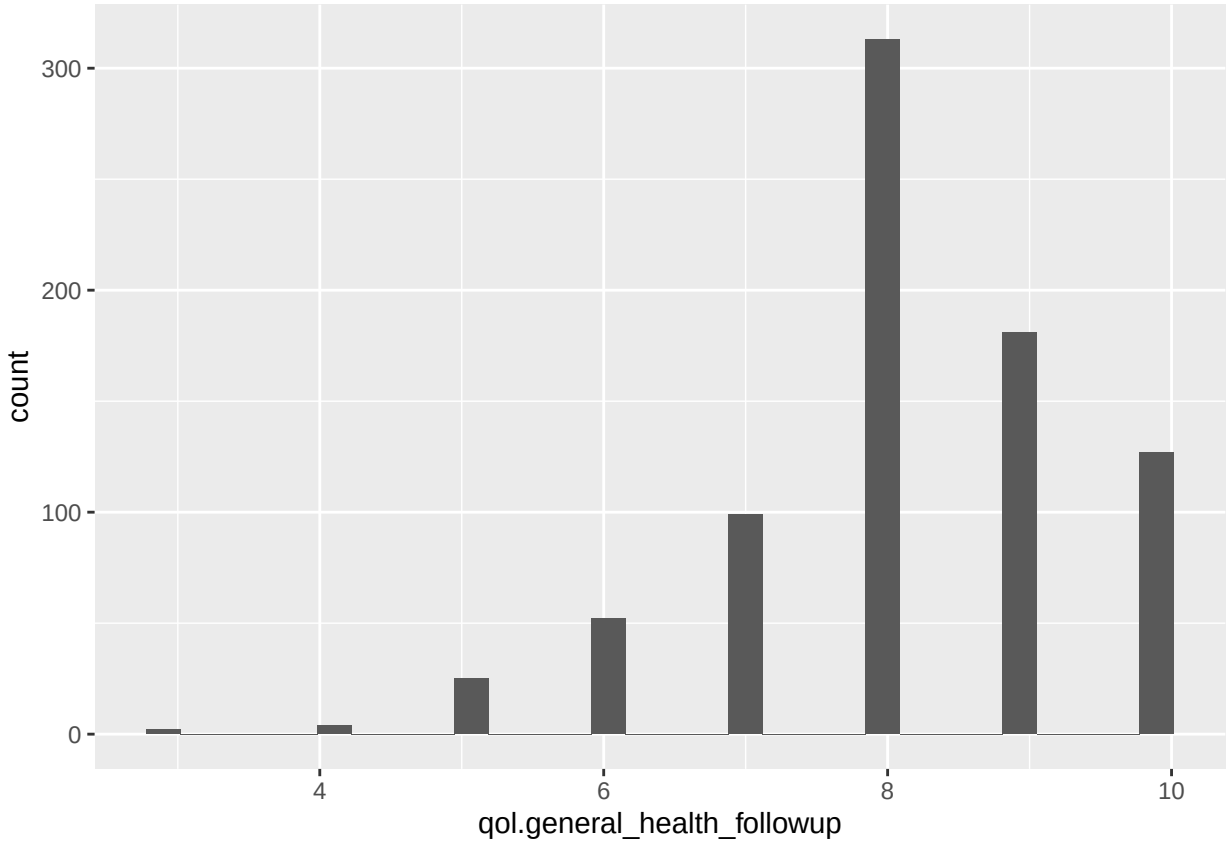
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```



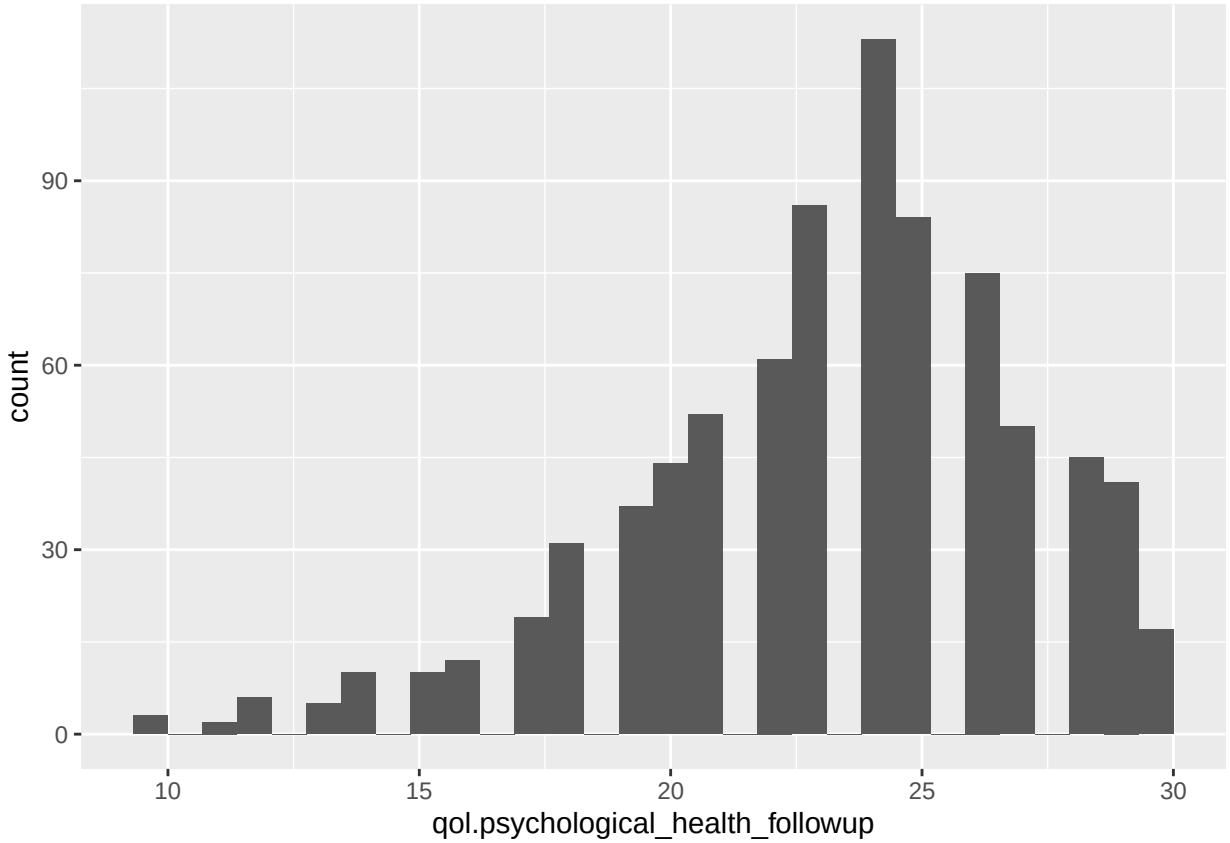

```
all_addiction_data |> ggplot(aes(qol.general_health_followup)) +
  geom_histogram()
```

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



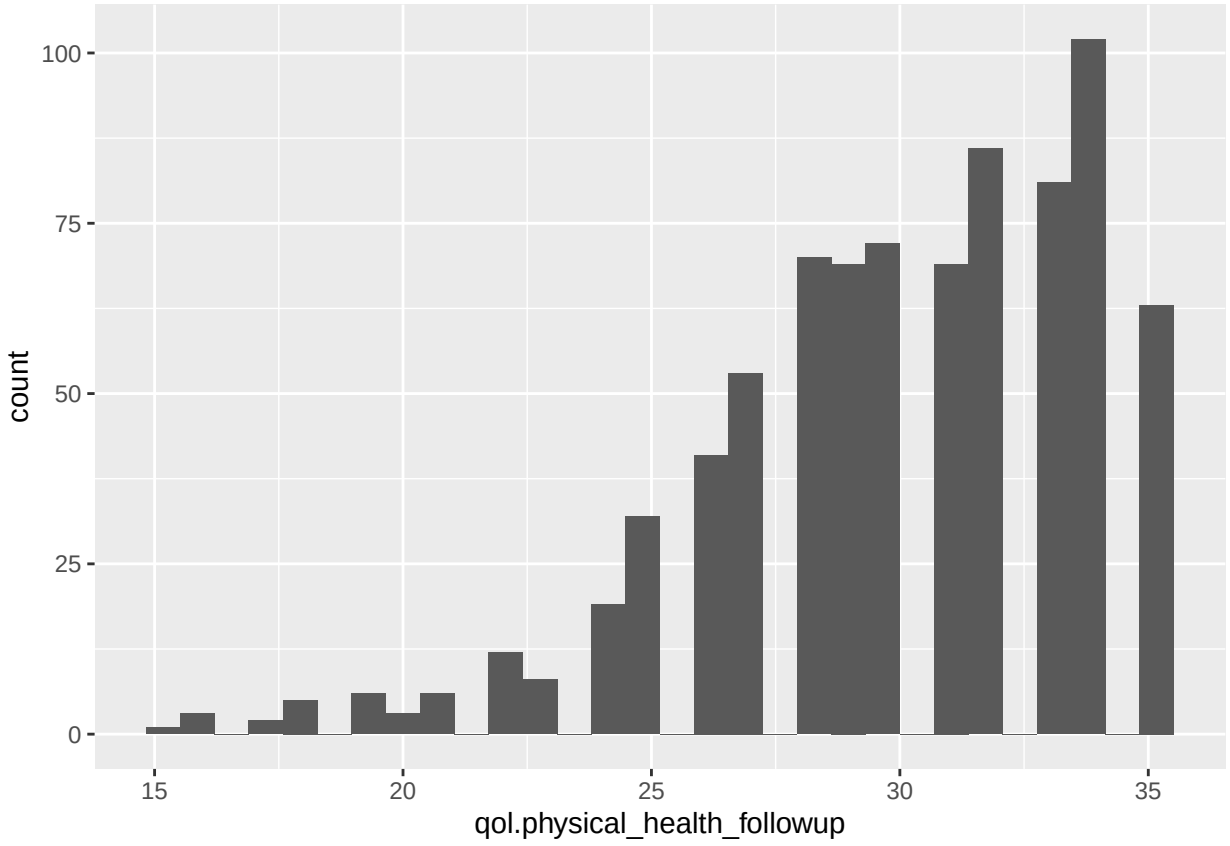

```
all_addiction_data |> ggplot(aes(qol.psychological_health_followup)) +
  geom_histogram()
```

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



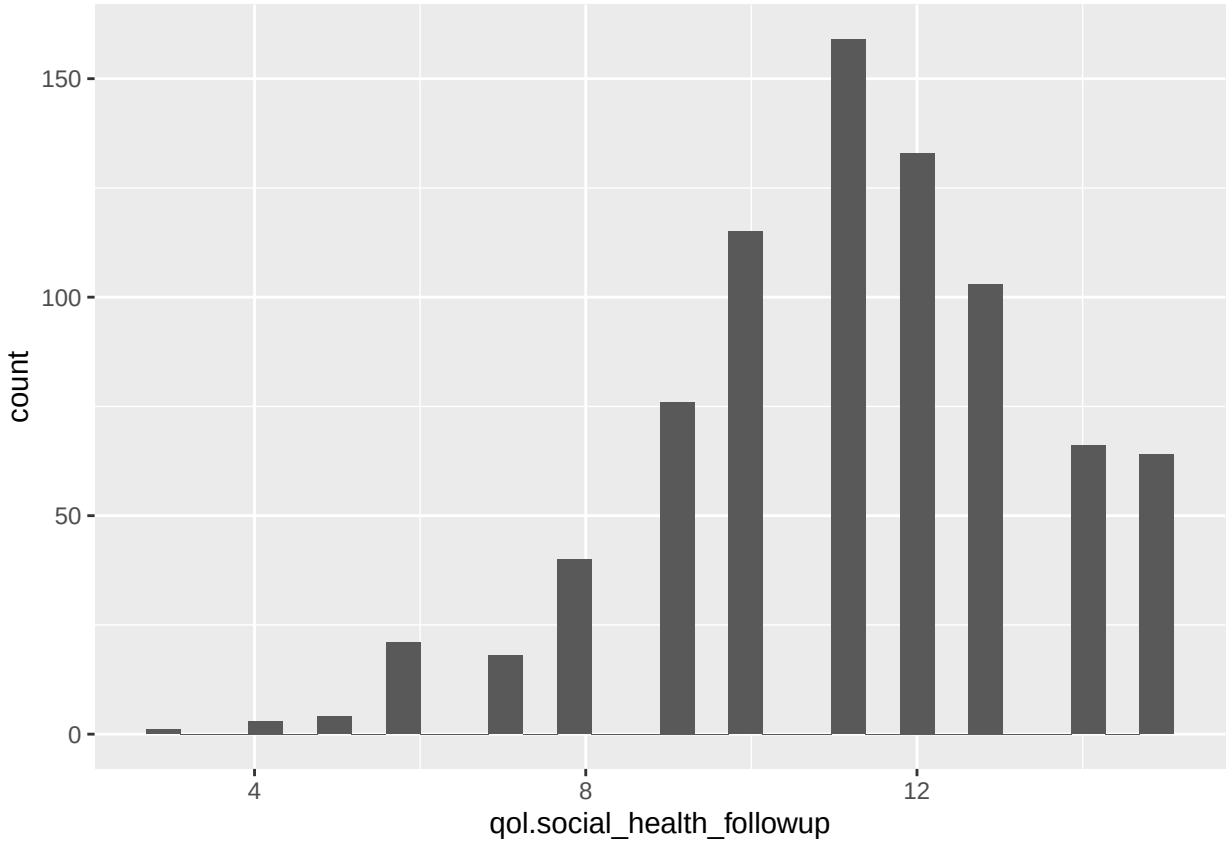

```
all_addiction_data |> ggplot(aes(qol.physical_health_followup)) +
  geom_histogram()
```

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



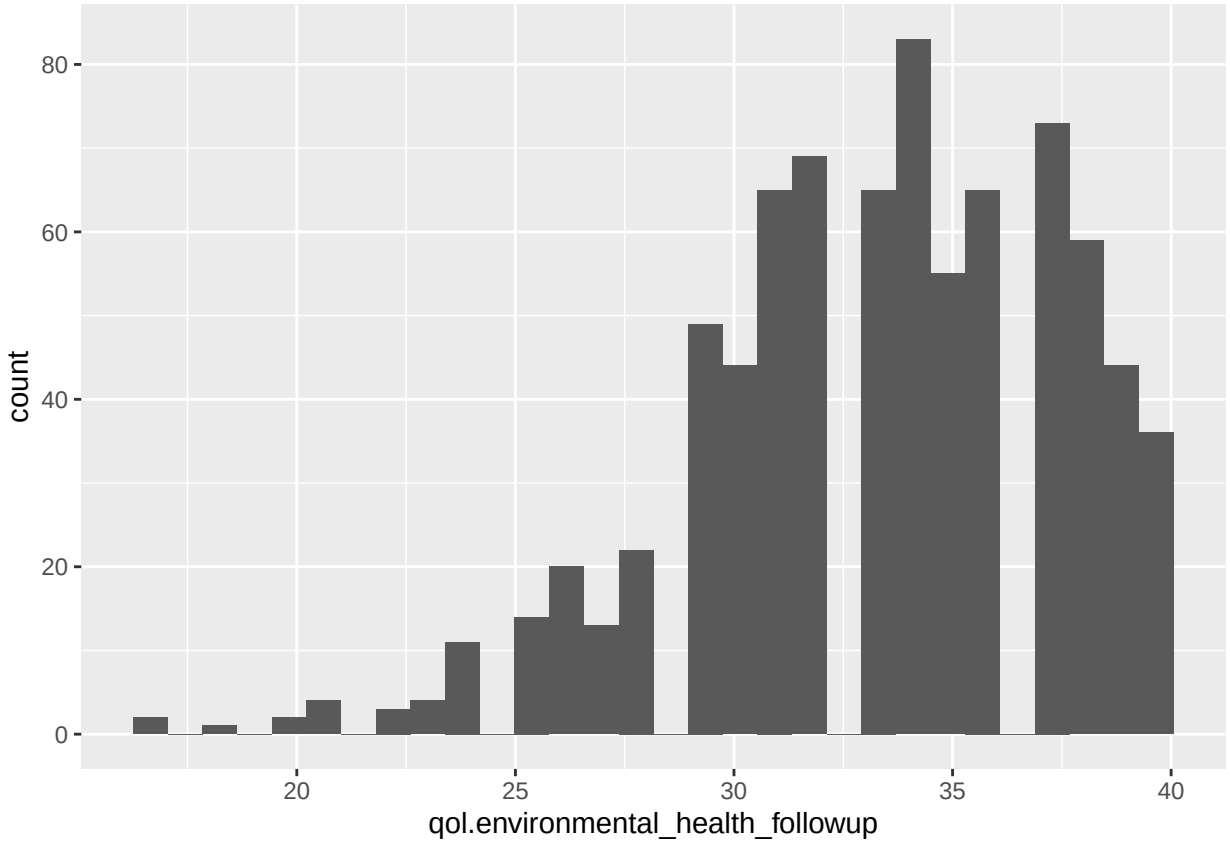

```
all_addiction_data |> ggplot(aes(qol.social_health_followup)) +
  geom_histogram()
```

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



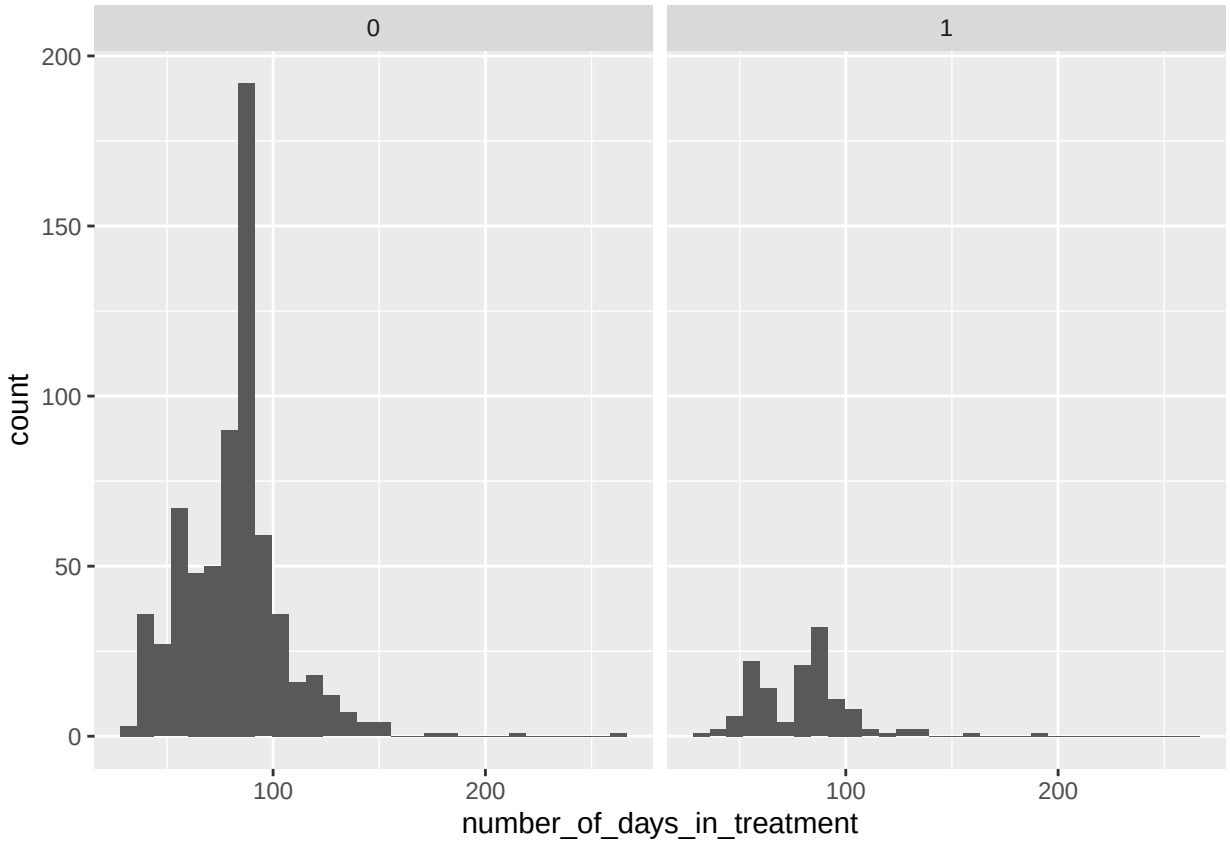

```
all_addiction_data |> ggplot(aes(qol.environmental_health_followup)) +
  geom_histogram()
```

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



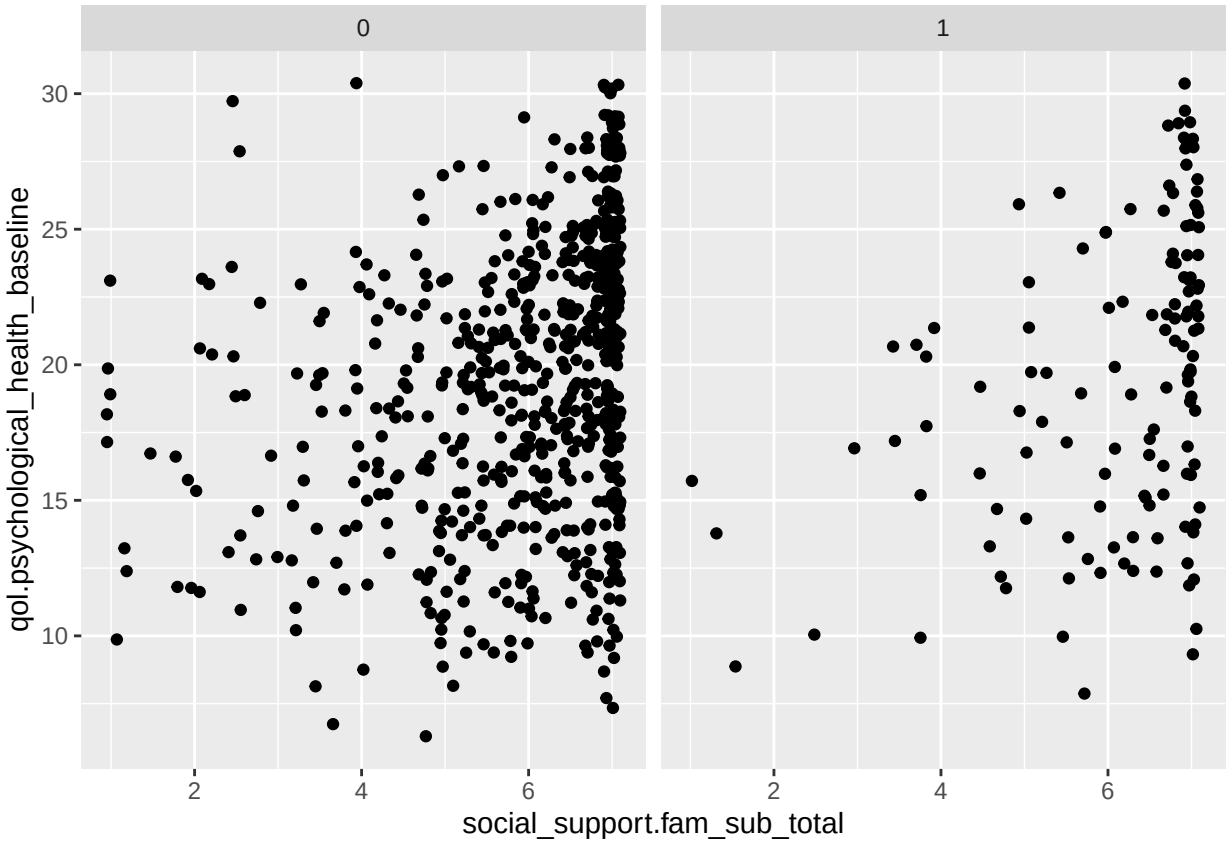

```
all_addiction_data |>
  ggplot(aes(number_of_days_in_treatment)) +
  geom_histogram() +
  facet_wrap(vars(SUD.is_Cocaine))
```

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



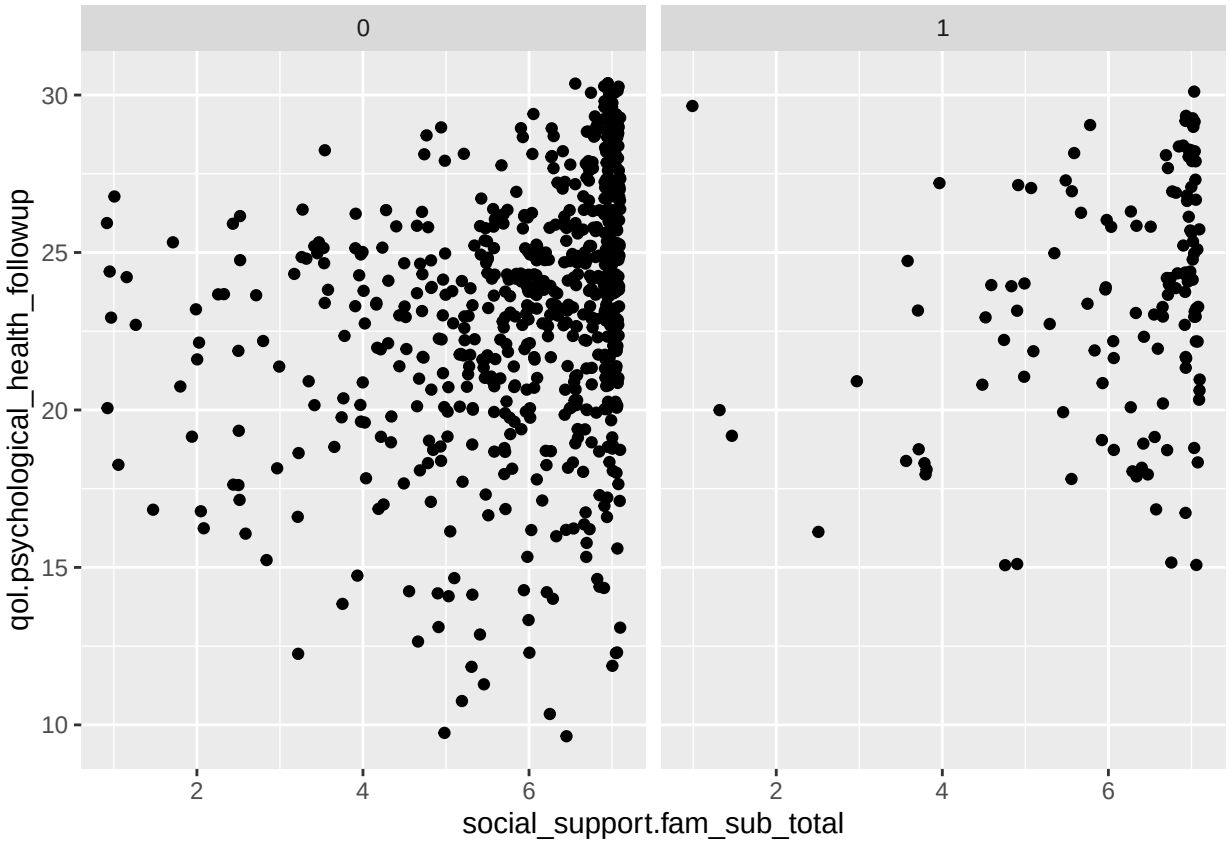

```
all_addiction_data |> ggplot(aes(x=social_support.fam_sub_total, y=qol.psychological_health_baseline)) +
  geom_jitter() +
  facet_wrap(vars(SUD.is_Cocaine))
```

```
## Warning: Removed 2 rows containing missing values (`geom_point()`).
```

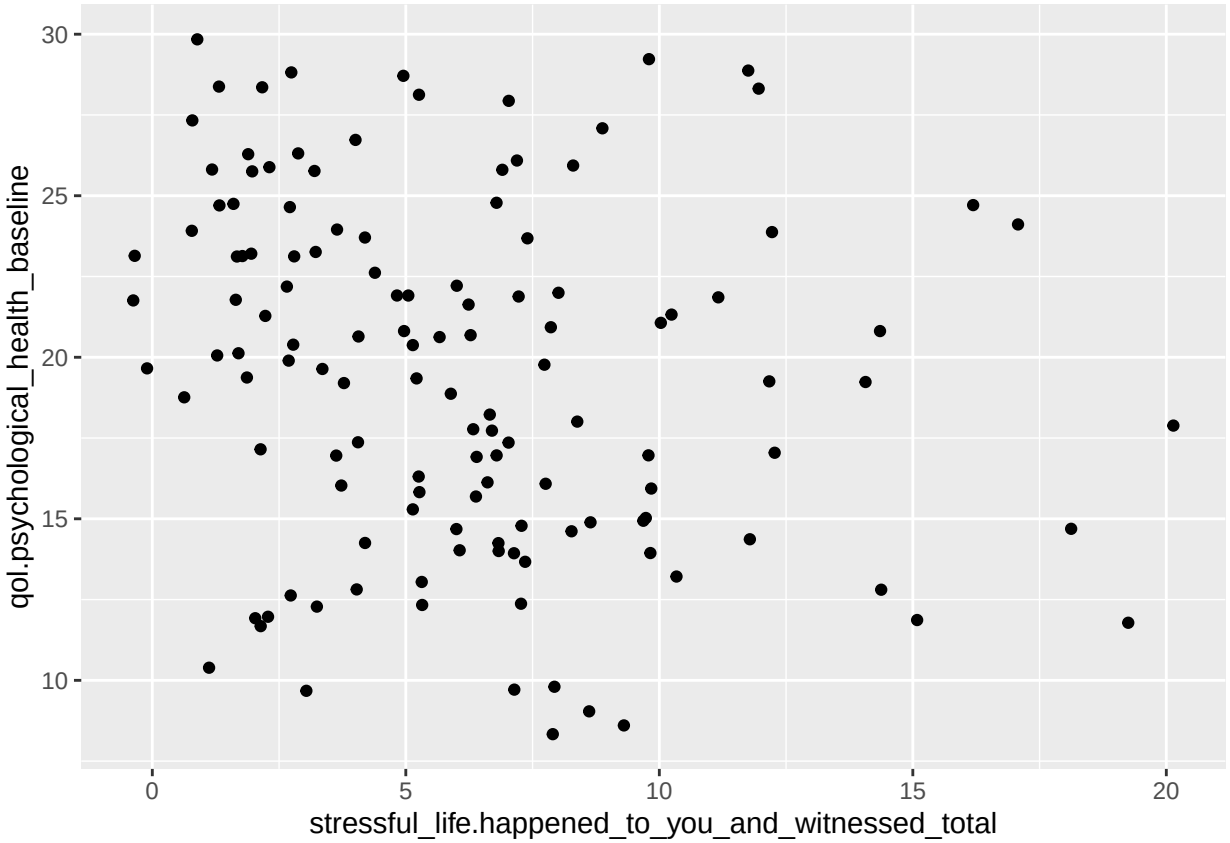



```
all_addiction_data |> ggplot(aes(x=social_support.fam_sub_total, y=qol.psychological_health_followup)) +
  geom_jitter() +
  facet_wrap(vars(SUD.is_Cocaine))
```

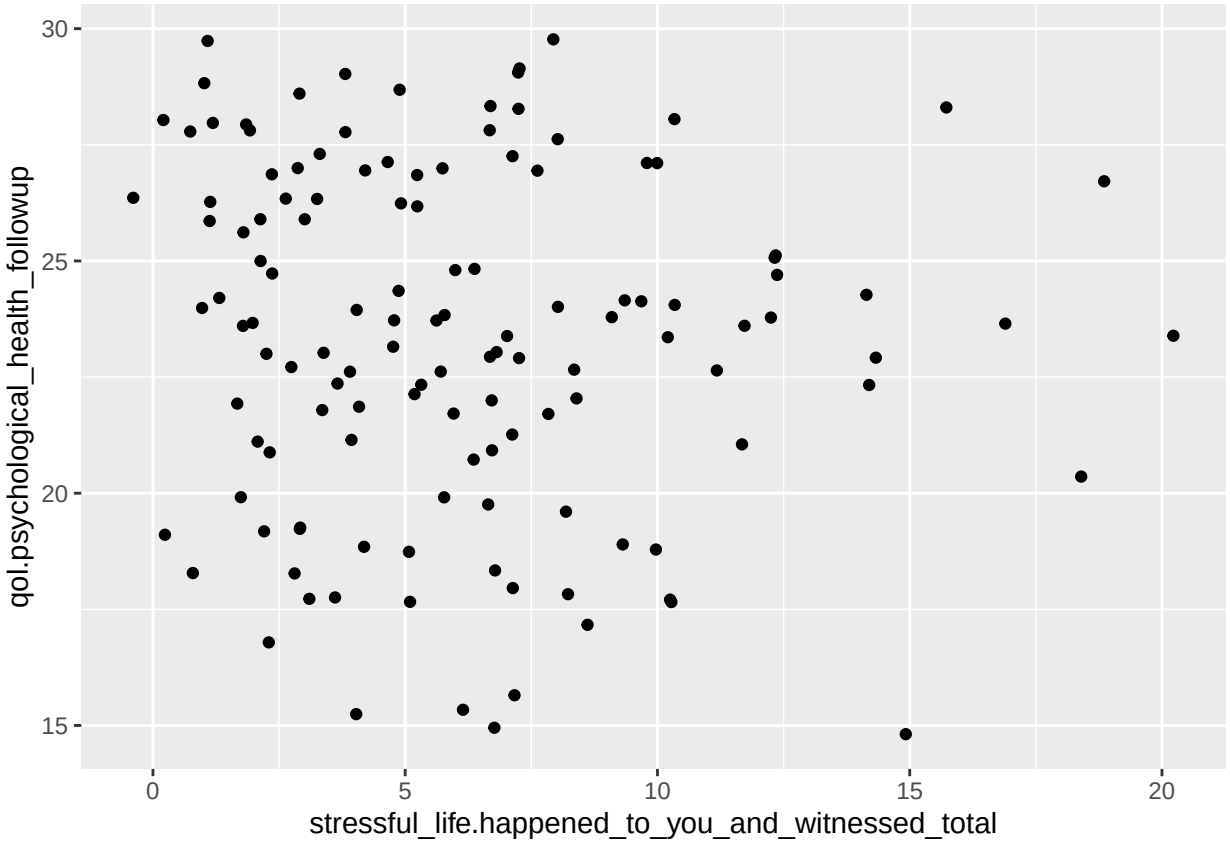
```
## Warning: Removed 2 rows containing missing values (`geom_point()`).
```



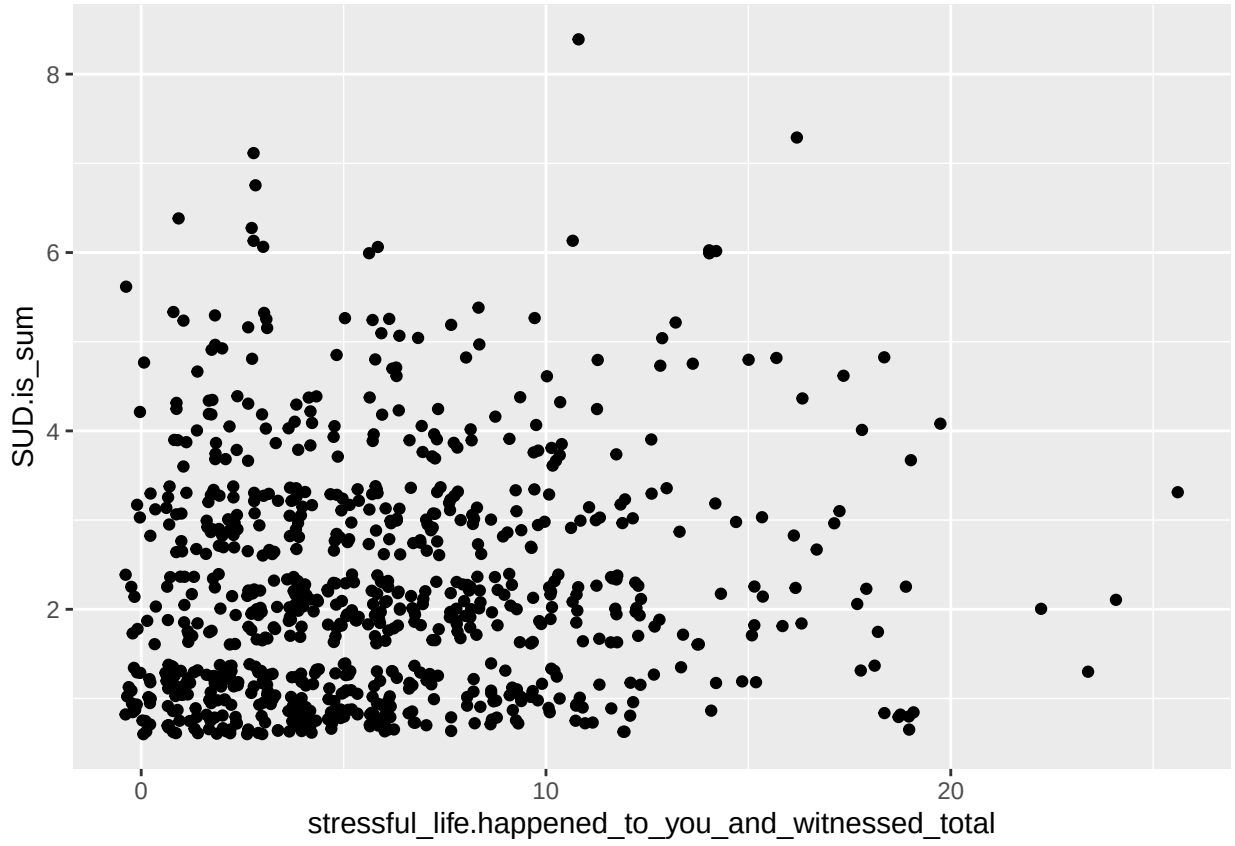

```
filtered_cocaine_data |> ggplot(aes(x=stressful_life.happened_to_you_and_witnessed_total, y=qol.psychol
  geom_jitter()
```



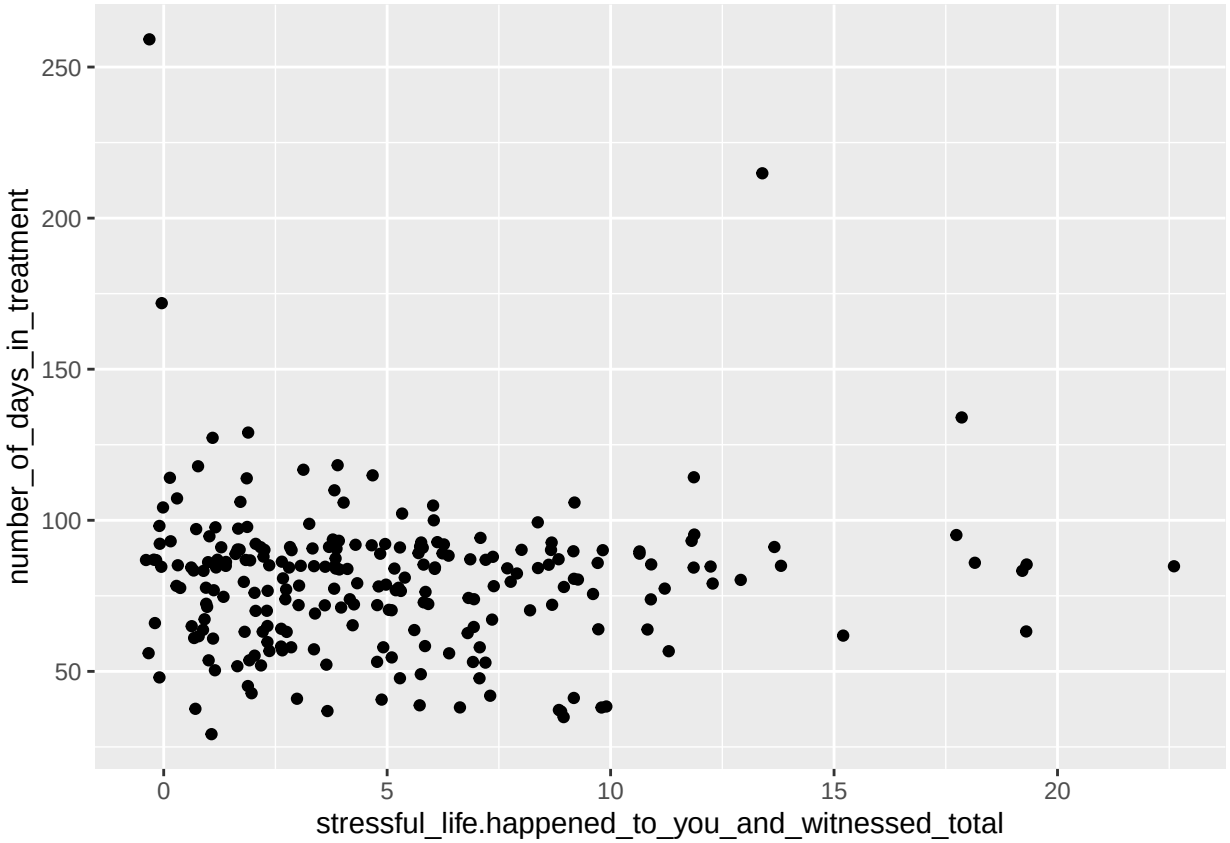

```
filtered_cocaine_data |> ggplot(aes(x=stressful_life.happened_to_you_and_witnessed_total, y=qol.psychol
  geom_jitter()
```



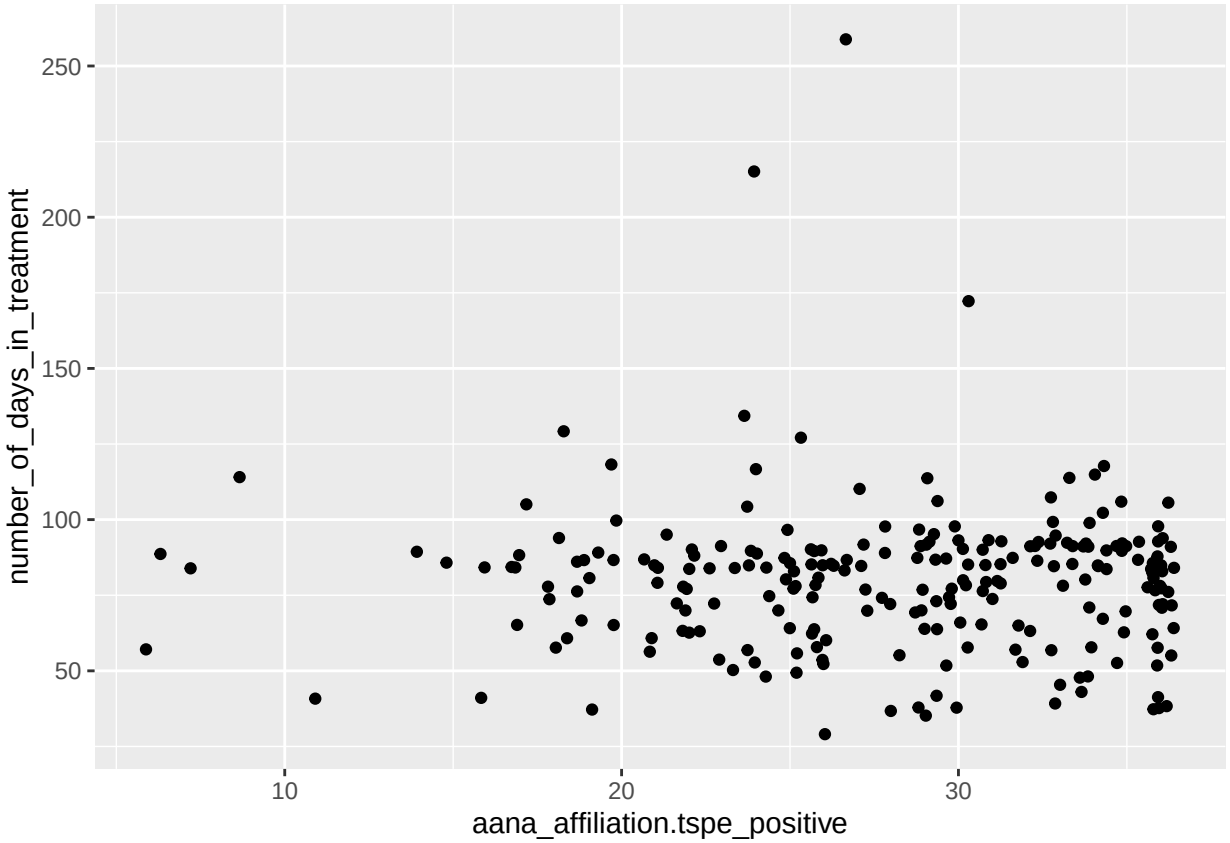

```
all_addiction_data |> ggplot(aes(x=stressful_life.happened_to_you_and_witnessed_total, y=SUD.is_sum)) +
  geom_jitter()
```




```
filtered_alcohol_data |> ggplot(aes(x=stressful_life.happened_to_you_and_witnessed_total, y=number_of_da
  geom_jitter()
```

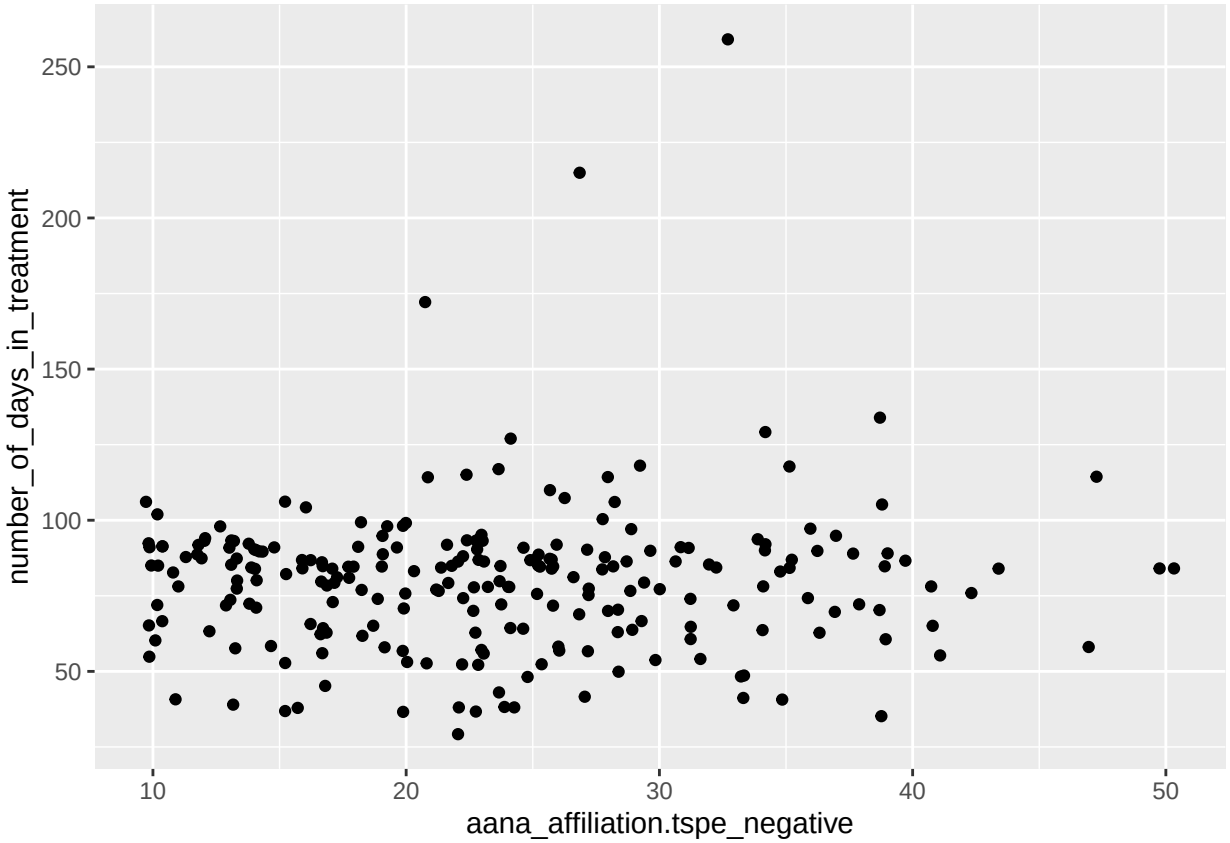



```
filtered_alcohol_data |> ggplot(aes(x=aana_affiliation.tspe_positive, y=number_of_days_in_treatment)) +
  geom_jitter()
```



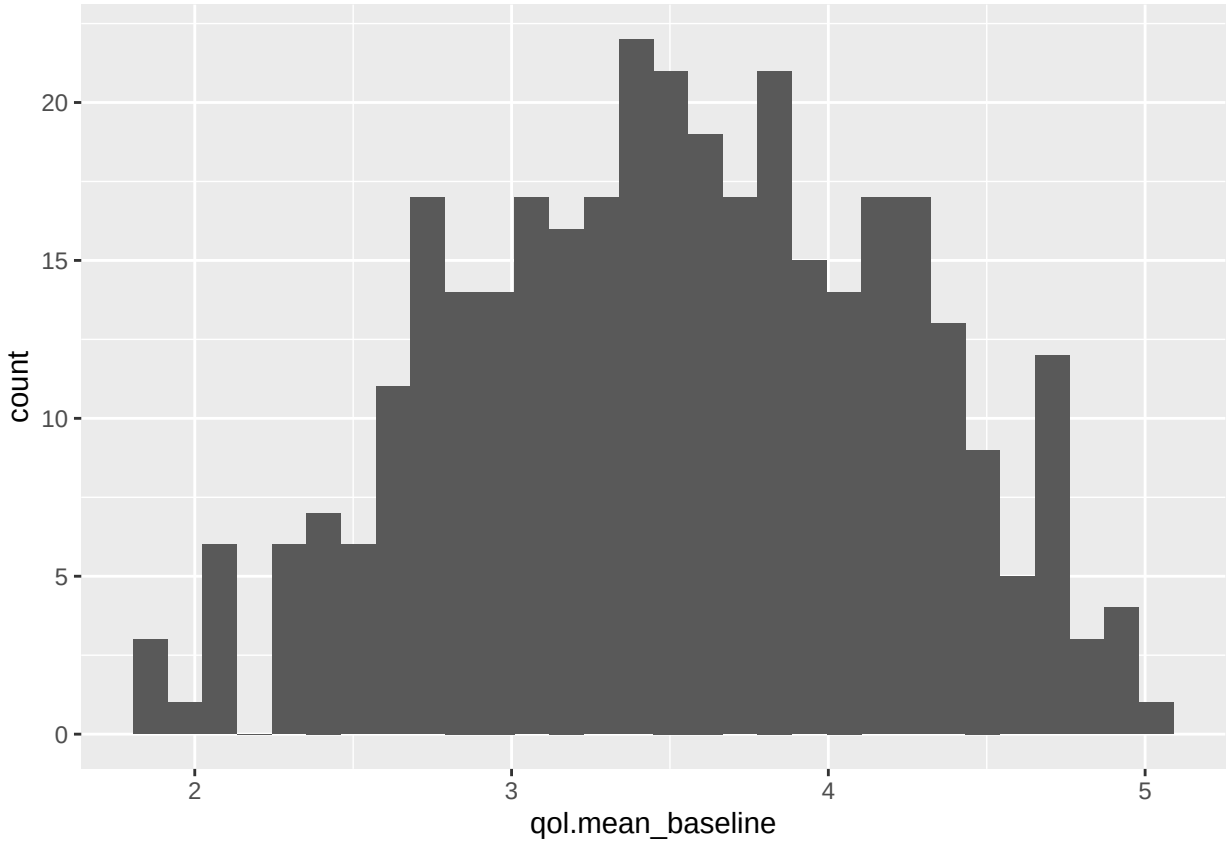

```
filtered_alcohol_data |> ggplot(aes(x=aana_affiliation.tspe_negative, y=number_of_days_in_treatment)) +
  geom_jitter()
```

```
## Warning: Removed 1 rows containing missing values (`geom_point()`).
```




```
all_addiction_data |>
  filter(stressful_life.physical_assault.happened_to_you == 1) |>
  ggplot(aes(qol.mean_baseline)) +
  geom_histogram()
```

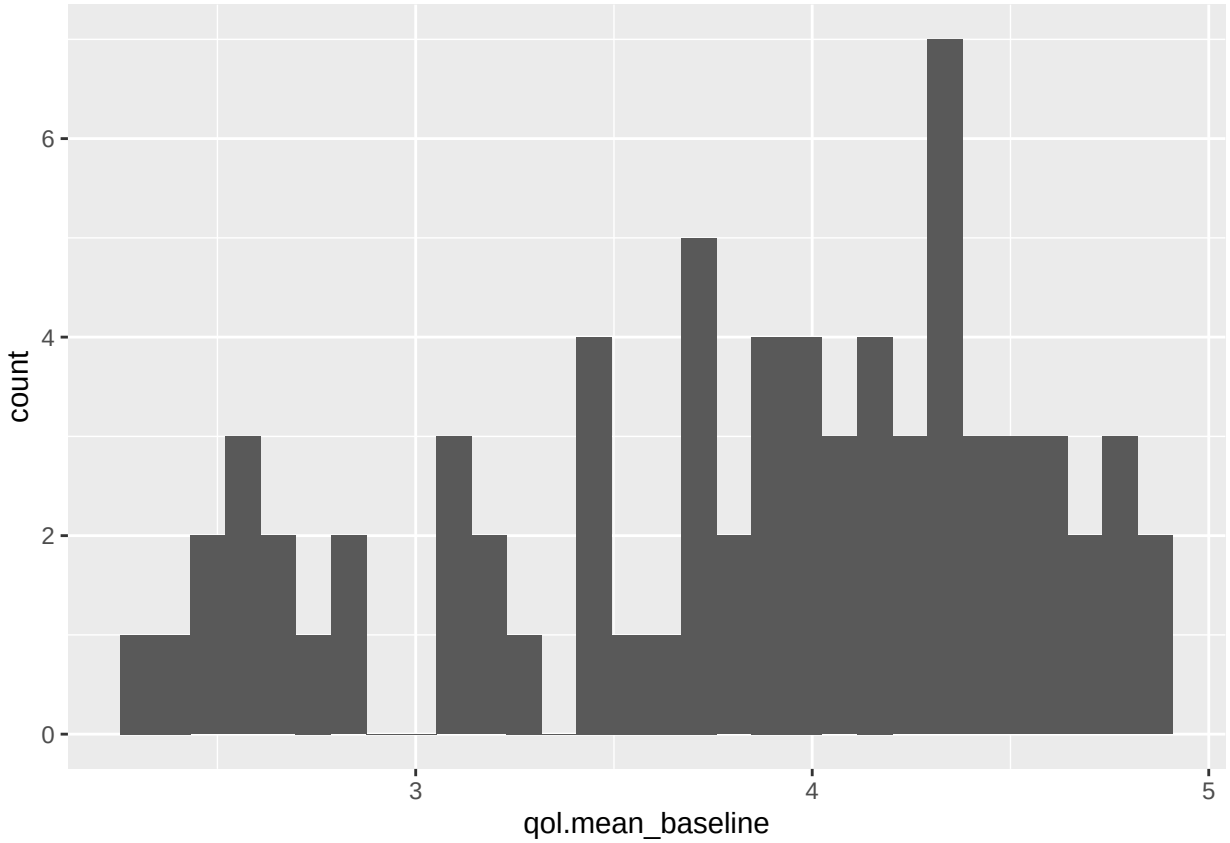
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```




```
all_addiction_data |>
  filter(stressful_life.happened_to_you_total == 0) |>
  ggplot(aes(qol.mean_baseline)) +
  geom_histogram()
```

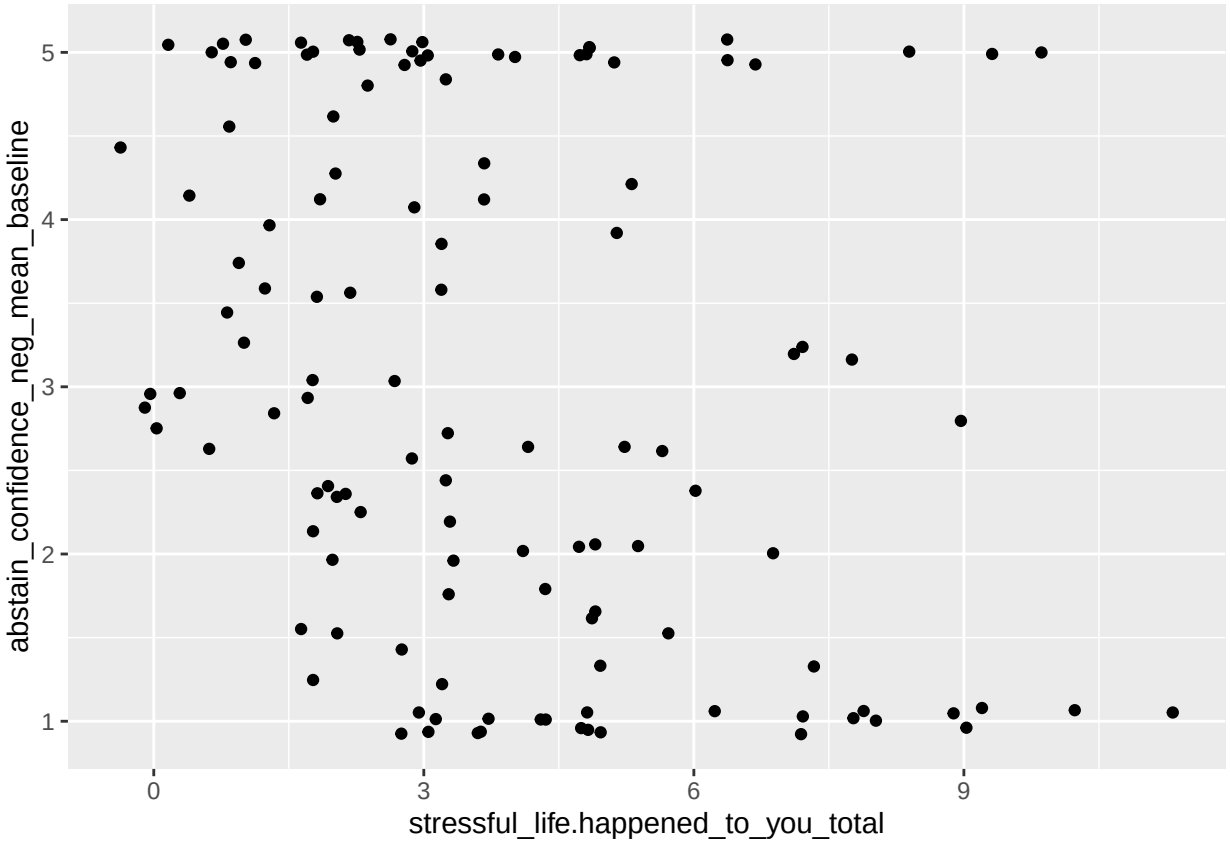
```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

```
## Warning: Removed 2 rows containing non-finite values (`stat_bin()`).
```



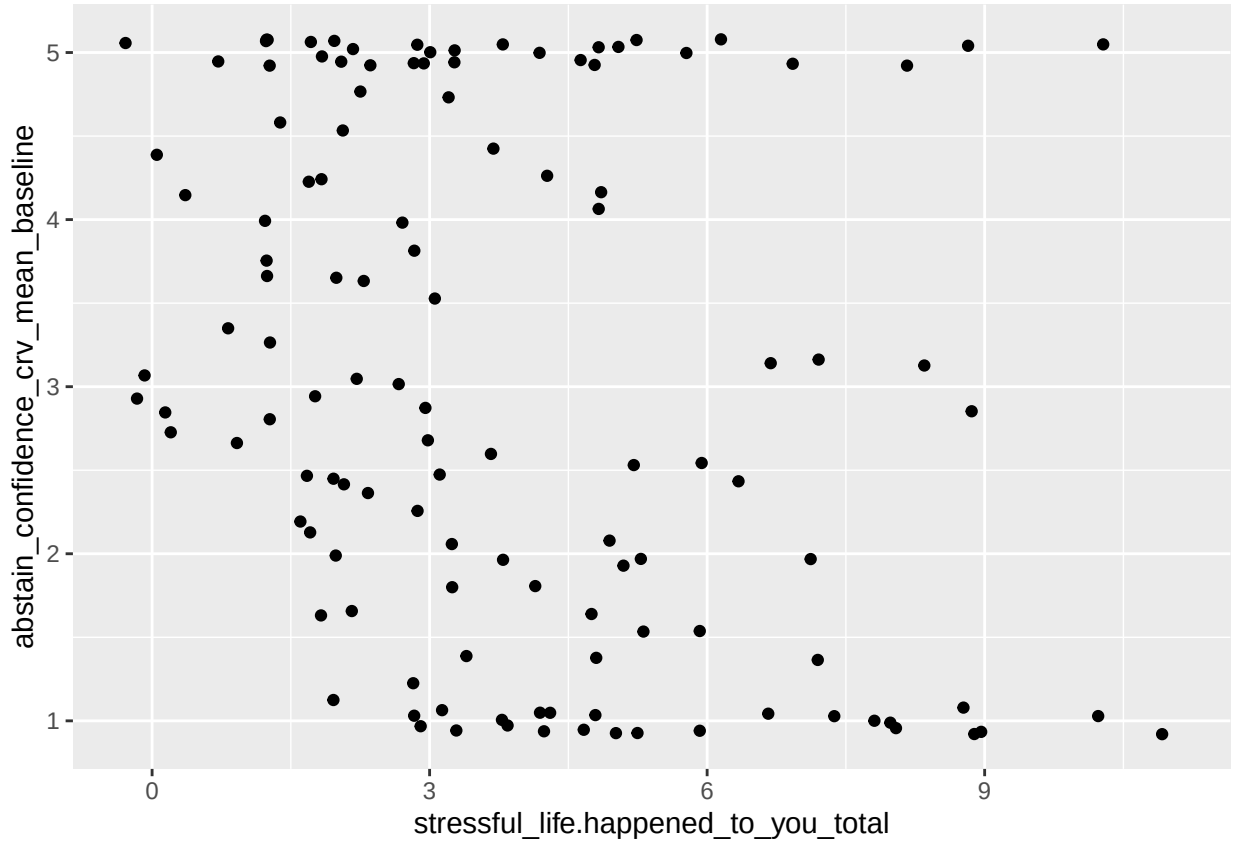

```
filtered_cocaine_data |>
  ggplot(aes(x=stressful_life.happened_to_you_total, y=abstain_confidence_neg_mean_baseline)) +
  geom_jitter()
```

```
## Warning: Removed 7 rows containing missing values (`geom_point()`).
```




```
filtered_cocaine_data |>
  ggplot(aes(x=stressful_life.happened_to_you_total, y=abstain_confidence_crv_mean_baseline)) +
  geom_jitter()
```

```
## Warning: Removed 7 rows containing missing values (`geom_point()`).
```




```
stress_to_abstain_model = lm(abstain_confidence_neg_mean_baseline ~
                               stressful_life.happened_to_you_total
                             + age
                             + gender
                             + education
                             + number_of_sober_days
                             + number_of_days_in_treatment
                             + SUD.is_sum
                             + social_support.total
                             + aana_affiliation.aaas_total
                             + aana_affiliation.tspe_positive
                             + childhood_total
                             + religion.positive_spiritual_cope,
                            all_addiction_data)
```

```
car::Anova(stress_to_abstain_model)
```

```
## Warning in printHypothesis(L, rhs, names(b)): one or more coefficients in the hypothesis include
##      arithmetic operators in their names;
##   the printed representation of the hypothesis will be omitted
```

```
## Anova Table (Type II tests)
##
## Response: abstain_confidence_neg_mean_baseline
##                                       Sum Sq  Df F value     Pr(>F)
## stressful_life.happened_to_you_total     15   1    7.99    0.00488 **
## age                                       6   1    3.43    0.06469 .
```

```
## gender                                    1   1    0.29    0.58932
## education                                53   4    7.22 0.00001130 ***
## number_of_sober_days                      1   1    0.37    0.54347
## number_of_days_in_treatment               0   1    0.22    0.63771
## SUD.is_sum                               48   1   26.02 0.00000046 ***
## social_support.total                     12   1    6.46    0.01131 *
## aana_affiliation.aaas_total               0   1    0.00    0.94449
## aana_affiliation.tspe_positive           24   1   13.27    0.00029 ***
## childhood_total                          12   1    6.38    0.01178 *
## religion.positive_spiritual_cope         15   1    8.00    0.00486 **
## Residuals                              1032 561
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
qol_model = lm(qol.mean_baseline ~
                 stressful_life.happened_to_you_total
               + age
               + gender
               + education
               + number_of_sober_days
               + number_of_days_in_treatment
               + SUD.is_sum
               + social_support.total
               + aana_affiliation.aaas_total
               + aana_affiliation.tspe_positive
               + childhood_total
               + religion.positive_spiritual_cope,
               all_addiction_data)
```

```
car::Anova(qol_model)
```

```
## Warning in printHypothesis(L, rhs, names(b)): one or more coefficients in the hypothesis include
##      arithmetic operators in their names;
##   the printed representation of the hypothesis will be omitted
```

```
## Anova Table (Type II tests)
##
## Response: qol.mean_baseline
##                                       Sum Sq  Df F value  Pr(>F)
## stressful_life.happened_to_you_total    2.4   1    7.77  0.0054 **
## age                                     1.1   1    3.47  0.0627 .
## gender                                  0.0   1    0.01  0.9152
## education                              10.6   4    8.48 1.1e-06 ***
## number_of_sober_days                    2.1   1    6.88  0.0089 **
## number_of_days_in_treatment             2.6   1    8.33  0.0040 **
## SUD.is_sum                              1.2   1    3.98  0.0463 *
## social_support.total                   42.5   1  136.20 < 2e-16 ***
## aana_affiliation.aaas_total             0.3   1    1.00  0.3173
## aana_affiliation.tspe_positive          3.1   1    9.98  0.0016 **
## childhood_total                         2.5   1    7.93  0.0050 **
## religion.positive_spiritual_cope        9.8   1   31.28 3.2e-08 ***
## Residuals                             228.8 733
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
duration_model = lm(number_of_days_in_treatment ~
                      stressful_life.happened_to_you_total
                    + age
                    + gender
                    + education
                    + number_of_sober_days
                    + number_of_days_in_treatment
                    + SUD.is_sum
                    + social_support.total
                    + aana_affiliation.aaas_total
                    + aana_affiliation.tspe_positive
                    + childhood_total
                    + religion.positive_spiritual_cope,
                    all_addiction_data)
```

```
## Warning in model.matrix.default(mt, mf, contrasts): the response appeared on
## the right-hand side and was dropped
```

```
## Warning in model.matrix.default(mt, mf, contrasts): problem with term 6 in
## model.matrix: no columns are assigned
```

```
car::Anova(duration_model)
```

```
## Warning in printHypothesis(L, rhs, names(b)): one or more coefficients in the hypothesis include
##      arithmetic operators in their names;
##   the printed representation of the hypothesis will be omitted
```

```
## Anova Table (Type II tests)
##
## Response: number_of_days_in_treatment
##                                      Sum Sq  Df F value  Pr(>F)
## stressful_life.happened_to_you_total     41   1    0.08   0.782
## age                                    1287   1    2.40   0.122
## gender                                  981   1    1.83   0.177
## education                             30925   4   14.38 2.6e-11 ***
## number_of_sober_days                    880   1    1.64   0.201
## number_of_days_in_treatment                   0
## SUD.is_sum                              470   1    0.87   0.350
## social_support.total                   1173   1    2.18   0.140
## aana_affiliation.aaas_total            1013   1    1.89   0.170
## aana_affiliation.tspe_positive         1928   1    3.59   0.059 .
## childhood_total                         812   1    1.51   0.219
## religion.positive_spiritual_cope        545   1    1.01   0.314
## Residuals                            394497 734
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
change_model = lm(impression_change_followup ~
                    stressful_life.happened_to_you_total
                  + age
                  + gender
                  + education
                  + number_of_sober_days
                  + number_of_days_in_treatment
                  + SUD.is_sum
                  + social_support.total
```

```
                              + aana_affiliation.aaas_total
                              + aana_affiliation.tspe_positive
                              + childhood_total
                              + religion.positive_spiritual_cope,
                              all_addiction_data)
```

```
car::Anova(change_model)
```

```
## Warning in printHypothesis(L, rhs, names(b)): one or more coefficients in the hypothesis include
##      arithmetic operators in their names;
##   the printed representation of the hypothesis will be omitted
```

```
## Anova Table (Type II tests)
##
## Response: impression_change_followup
##                                      Sum Sq  Df F value  Pr(>F)
## stressful_life.happened_to_you_total      0   1    0.42 0.51937
## age                                       0   1    0.49 0.48599
## gender                                    1   1    1.25 0.26393
## education                                 3   4    0.87 0.47952
## number_of_sober_days                      0   1    0.21 0.64890
## number_of_days_in_treatment               9   1    9.27 0.00242 **
## SUD.is_sum                                1   1    0.90 0.34404
## social_support.total                      5   1    5.14 0.02368 *
## aana_affiliation.aaas_total               8   1    7.97 0.00489 **
## aana_affiliation.tspe_positive           14   1   13.64 0.00024 ***
## childhood_total                           0   1    0.50 0.48157
## religion.positive_spiritual_cope          4   1    3.58 0.05903 .
## Residuals                               722 729
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
commitment_model = lm(commit_to_change.total ~
                        stressful_life.happened_to_you_total
                      + age
                      + gender
                      + education
                      + number_of_sober_days
                      + number_of_days_in_treatment
                      + SUD.is_sum
                      + social_support.total
                      + aana_affiliation.aaas_total
                      + aana_affiliation.tspe_positive
                      + childhood_total
                      + religion.positive_spiritual_cope,
                      all_addiction_data)
```

```
car::Anova(commitment_model)
```

```
## Warning in printHypothesis(L, rhs, names(b)): one or more coefficients in the hypothesis include
##      arithmetic operators in their names;
##   the printed representation of the hypothesis will be omitted
```

```
## Anova Table (Type II tests)
##
## Response: commit_to_change.total
```

```
##                                      Sum Sq  Df F value Pr(>F)
## stressful_life.happened_to_you_total      2   1    0.15 0.6990
## age                                      95   1    7.41 0.0066 **
## gender                                    1   1    0.06 0.8066
## education                               123   4    2.40 0.0487 *
## number_of_sober_days                      7   1    0.54 0.4641
## number_of_days_in_treatment              11   1    0.83 0.3621
## SUD.is_sum                               35   1    2.70 0.1005
## social_support.total                     84   1    6.57 0.0106 *
## aana_affiliation.aaas_total               1   1    0.11 0.7379
## aana_affiliation.tspe_positive          585   1   45.59  3e-11 ***
## childhood_total                           1   1    0.04 0.8392
## religion.positive_spiritual_cope         54   1    4.22 0.0403 *
## Residuals                              9407 733
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
stress_to_abstain_model = lm(abstain_confidence_neg_mean_baseline ~
                               stressful_life.happened_to_you_total
                             + age
                             + gender
                             + education
                             + number_of_sober_days
                             + number_of_days_in_treatment
                             + SUD.is_sum
                             + social_support.total
                             + aana_affiliation.aaas_total
                             + aana_affiliation.tspe_positive
                             + childhood_total
                             + religion.positive_spiritual_cope,
                            all_addiction_data)
```

- SUD.is_Alchohol
- SUD.is_Opioid
- SUD.is_Cannabis
- SUD.is_sedative_hypnotic_anxiolytic
- SUD.is_Cocaine
- SUD.is_Other_stimulant
- SUD.is_Hallucinogen
- SUD.is_Nicotine
- SUD.is_Inhalant
- SUD.is_psychoactive

```
car::Anova(stress_to_abstain_model)
```

```
## Warning in printHypothesis(L, rhs, names(b)): one or more coefficients in the hypothesis include
##      arithmetic operators in their names;
##   the printed representation of the hypothesis will be omitted
```

```
## Anova Table (Type II tests)
##
## Response: abstain_confidence_neg_mean_baseline
##                                      Sum Sq  Df F value     Pr(>F)
## stressful_life.happened_to_you_total     15   1    7.99    0.00488 **
## age                                       6   1    3.43    0.06469 .
## gender                                    1   1    0.29    0.58932
```

```
## education                                  53   4    7.22 0.00001130 ***
## number_of_sober_days                        1   1    0.37    0.54347
## number_of_days_in_treatment                 0   1    0.22    0.63771
## SUD.is_sum                                 48   1   26.02 0.00000046 ***
## social_support.total                       12   1    6.46    0.01131 *
## aana_affiliation.aaas_total                 0   1    0.00    0.94449
## aana_affiliation.tspe_positive             24   1   13.27    0.00029 ***
## childhood_total                            12   1    6.38    0.01178 *
## religion.positive_spiritual_cope           15   1    8.00    0.00486 **
## Residuals                                1032 561
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```