Resp Support at three year (choice=Decannulated) of Tracheostomy Resource Utilization Study
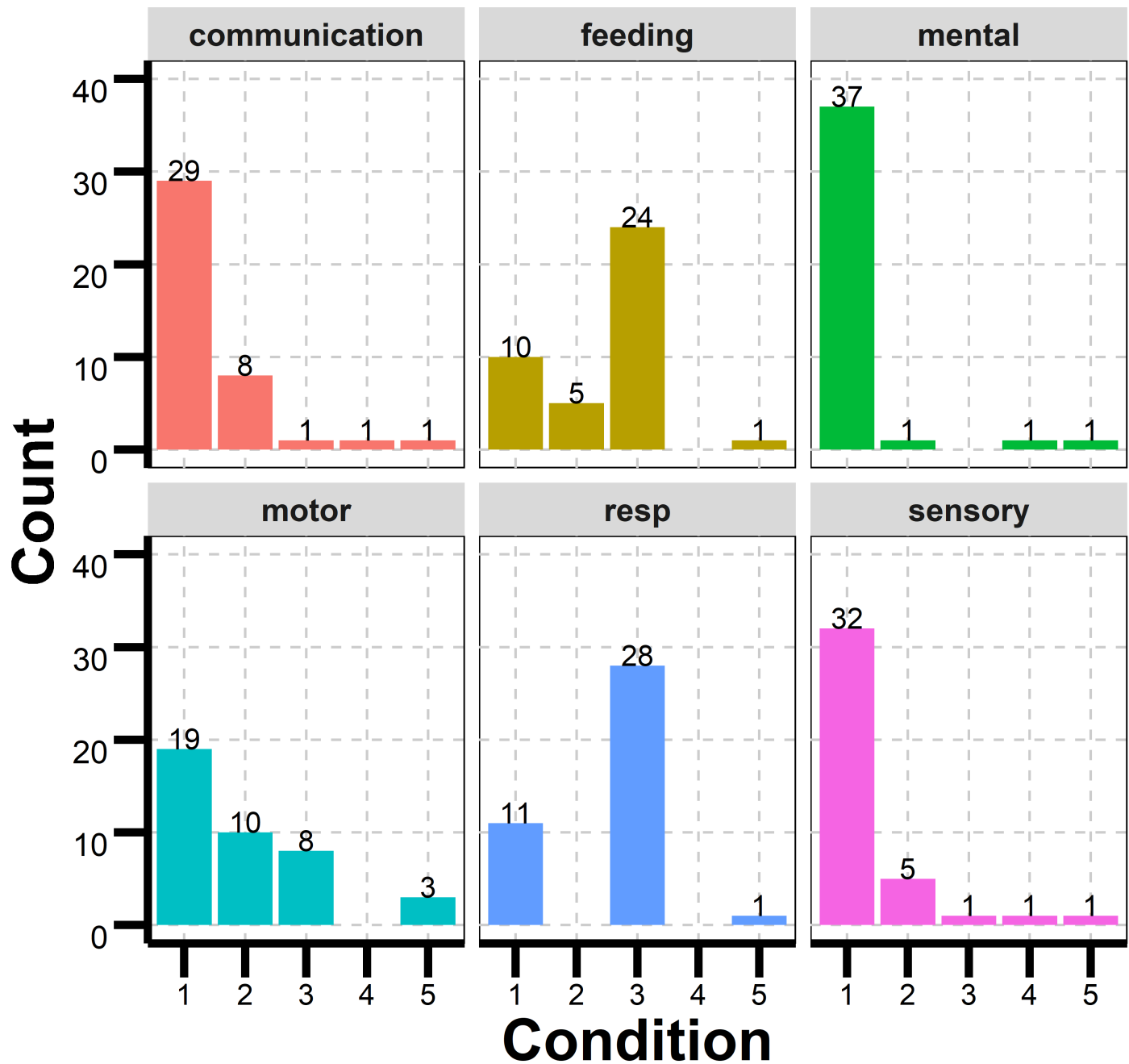
- Bar plots of 6 components of FSS total
- Heatmap-like plot of 6 components
- Fit logistic regression for all 6 components (outcome is Resp Support at three year (choice=Decannulated))
- Fit logistic regression for one component(MOTOR, FEEDING)
- Stepwise of logistic regression in terms of AIC
- P-value of chi-square test between one component and the outcome
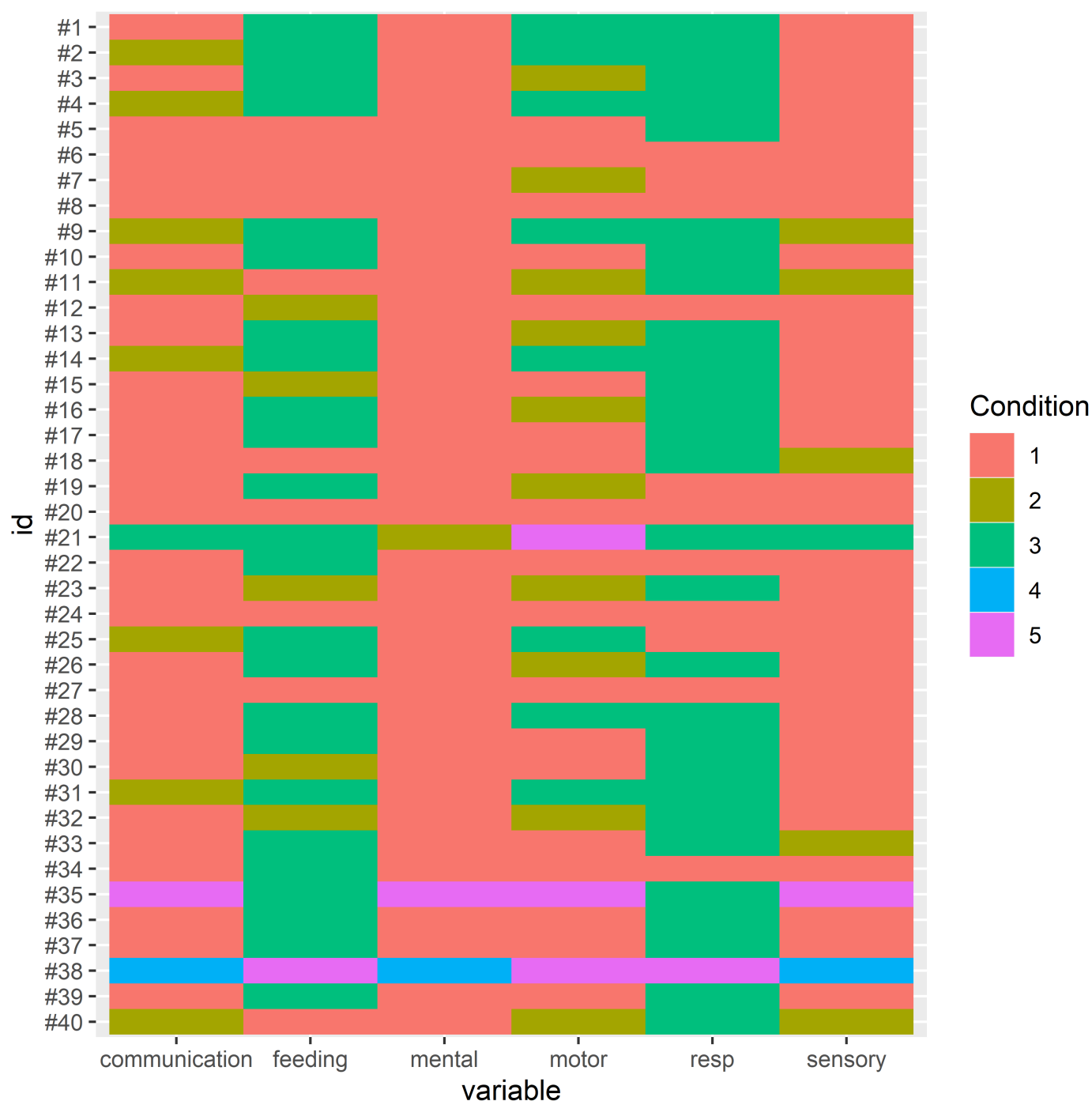
Bar plots of 6 components of FSS total

1: Normal; 2: Mild; 3: Moderate; 4: Severe; 5: Very severe dysfunction
13 missing in the 6 components

Facet plots of 6 components of FSS total in year 3

Heatmap-like plot of 6 components

Fit logistic regression for all 6 components (outcome is Resp Support at three year (choice=Decannulated))

All covariates are insignificant.

```
##
## Call:
## glm(formula = respsupports_Decan ~ mental + sensory + communication +
##     motor + feeding + resp, family = "binomial", data = resp3)
##
## Deviance Residuals:
##       Min         1Q      Median         3Q         Max
## -2.409e-06  -2.409e-06  -2.409e-06   2.409e-06   2.409e-06
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -2.657e+01  2.056e+05       0        1
## mental1          4.265e-12  2.824e+05       0        1
## sensory1        -3.186e-12  2.127e+05       0        1
## communication1 -1.606e-12  1.829e+05       0        1
## motor1           1.289e-12  1.459e+05       0        1
## feeding1        -6.957e-12  1.633e+05       0        1
## resp1            5.313e+01  1.570e+05       0        1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 4.7054e+01  on 39  degrees of freedom
## Residual deviance: 2.3206e-10  on 33  degrees of freedom
## AIC: 14
##
## Number of Fisher Scoring iterations: 25
```

Fit logistic regression for one component(MOTOR, FEEDING)

Going to Normal from other categories in MOTOR, the odds of checked in the outcome (versus unchecked) increase by a factor of 4.4.

Going to Normal from other categories in FEEDING, the odds of checked in the outcome (versus unchecked) increase by a factor of 7.5.

```
##
## Call:
## glm(formula = respsupports_Decan ~ motor, family = "binomial",
##     data = resp3)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.0455  -1.0455  -0.5553   1.3153   1.9728
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -1.7918     0.6236  -2.873  0.00406 **
## motor1        1.4733     0.7777   1.894  0.05816 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 47.054  on 39  degrees of freedom
## Residual deviance: 43.089  on 38  degrees of freedom
## AIC: 47.089
##
## Number of Fisher Scoring iterations: 4
##
## Call:
## glm(formula = respsupports_Decan ~ feeding, family = "binomial",
##     data = resp3)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.3537  -0.6039  -0.6039   1.0108   1.8930
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept)  -1.6094     0.4899  -3.285  0.00102 **
## feeding1      2.0149     0.8103   2.486  0.01290 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 47.054  on 39  degrees of freedom
## Residual deviance: 40.494  on 38  degrees of freedom
## AIC: 44.494
##
## Number of Fisher Scoring iterations: 4
```

Stepwise of logistic regression in terms of AIC

step1: mental + sensory + communication + motor + feeding + resp

step2: sensory + communication + motor + feeding + resp

step3: communication + motor + feeding + resp

step4: motor + feeding + resp

step5: feeding + resp

step6: resp

```
##
## Call:  glm(formula = respsupports_Decan ~ resp, family = "binomial",
##     data = resp3)
##
## Coefficients:
## (Intercept)          resp1
##       -26.57          53.13
##
## Degrees of Freedom: 39 Total (i.e. Null);  38 Residual
## Null Deviance:        47.05
## Residual Deviance: 2.321e-10     AIC: 4
```

When resp=="Normal", respsupports_Decan=="checked"

P-value of chi-square test between one component and the outcome

FEEDING and RESPIRATORY have relationship with the outcome

```
## $mental
## [1] 0.6621587
##
## $sensory
## [1] 0.1323356
##
## $communication
## [1] 0.2265101
##
## $motor
## [1] 0.1066999
##
## $feeding
## [1] 0.02451999
##
## $resp
## [1] 3.065877e-09
```