Model Fit

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Contents


```
library(survey)
```

```
## Loading required package: grid
```

```
## Loading required package: Matrix
```

```
## Loading required package: survival
```

```
##
## Attaching package: 'survey'
```

```
## The following object is masked from 'package:graphics':
##
##     dotchart
```

```
source('analysis/chendaniely/model_utils.R')

load('data/model_dataframes.RData')


svy_never_every     <- svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weig
svy_never_some      <- svydesign(ids = ~1, weights = ~weight, data = never_some[!is.na(never_some$weight
svy_never_someevery <- svydesign(ids = ~1, weights = ~weight, data = never_someevery[!is.na(never_someev
svy_some_every      <- svydesign(ids = ~1, weights = ~weight, data = some_every[!is.na(some_every$weight
```

Demographic model

- ppagecat
- PPEDUCAT
- income
- PPREG4
- work

every vs. never

```
ne_demo <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work,
       design = svy_never_every,
       family = quasibinomial(link = "logit"))
print_svy_mod(ne_demo)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -1.15875    0.38131  -3.039 0.002410
## ppagecat25-34                      -0.12446    0.25785  -0.483 0.629387
## ppagecat35-44                       0.11411    0.24482   0.466 0.641197
## ppagecat45-54                       0.36594    0.23766   1.540 0.123797
## ppagecat55-64                       0.79890    0.22843   3.497 0.000482
## ppagecat65-74                       1.23304    0.24325   5.069 4.43e-07
## ppagecat75+                         1.78680    0.31427   5.686 1.53e-08
## PPEDUCATHigh school                 0.12528    0.21964   0.570 0.568488
## PPEDUCATSome college                0.04576    0.22502   0.203 0.838890
## PPEDUCATBachelor_s degree or higher 0.56223    0.23241   2.419 0.015662
## income$10k to $25k                 -0.03187    0.32358  -0.098 0.921563
```

```
## income$25k to $50k                   0.32064    0.31107   1.031 0.302792
## income$50k to $75k                   0.54019    0.31574   1.711 0.087289
## income$75k to $100k                  0.59079    0.32660   1.809 0.070644
## income$100k to $150k                 0.84520    0.32077   2.635 0.008493
## incomeover $150k                     1.11446    0.36584   3.046 0.002352
## PPREG4Northeast                      0.08301    0.16879   0.492 0.622954
## PPREG4South                          0.07621    0.14528   0.525 0.599952
## PPREG4West                           0.18289    0.17063   1.072 0.283932
## workemployed                        -0.32218    0.13615  -2.366 0.018070
##
## (Intercept)                          **
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64                        ***
## ppagecat65-74                        ***
## ppagecat75+                          ***
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher *
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k                   .
## income$75k to $100k                  .
## income$100k to $150k                 **
## incomeover $150k                     **
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed                         *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 1.004179)
##
## Number of Fisher Scoring iterations: 4
##
##                                  term     or sig or_std_err or_lower
## 1                          (Intercept) 0.3139  **      1.464  -2.5559
## 2                        ppagecat25-34 0.8830          1.294  -1.6535
## 3                        ppagecat35-44 1.1209          1.277  -1.3828
## 4                        ppagecat45-54 1.4419          1.268  -1.0439
## 5                        ppagecat55-64 2.2231 ***      1.257  -0.2399
## 6                        ppagecat65-74 3.4316 ***      1.275   0.9319
## 7                          ppagecat75+ 5.9703 ***      1.369   3.2866
## 8                  PPEDUCATHigh school 1.1335          1.246  -1.3080
## 9                 PPEDUCATSome college 1.0468          1.252  -1.4078
## 10 PPEDUCATBachelor_s degree or higher 1.7546   *      1.262  -0.7182
## 11                   income$10k to $25k 0.9686          1.382  -1.7402
## 12                   income$25k to $50k 1.3780          1.365  -1.2972
## 13                   income$50k to $75k 1.7163   .      1.371  -0.9714
## 14                  income$75k to $100k 1.8054   .      1.386  -0.9116
## 15                 income$100k to $150k 2.3284  **      1.378  -0.3728
## 16                     incomeover $150k 3.0479  **      1.442   0.2222
```

```
## 17                     PPREG4Northeast 1.0865          1.184  -1.2338
## 18                         PPREG4South 1.0792          1.156  -1.1873
## 19                          PPREG4West 1.2007          1.186  -1.1240
## 20                        workemployed 0.7246   *      1.146  -1.5213
##    or_upper estimate std.error statistic   p.value
## 1     3.184 -1.15875    0.3813  -3.03891 2.410e-03
## 2     3.419 -0.12446    0.2578  -0.48268 6.294e-01
## 3     3.625  0.11411    0.2448   0.46611 6.412e-01
## 4     3.928  0.36594    0.2377   1.53979 1.238e-01
## 5     4.686  0.79890    0.2284   3.49733 4.820e-04
## 6     5.931  1.23304    0.2433   5.06894 4.435e-07
## 7     8.654  1.78680    0.3143   5.68561 1.530e-08
## 8     3.575  0.12528    0.2196   0.57039 5.685e-01
## 9     3.501  0.04576    0.2250   0.20334 8.389e-01
## 10    4.227  0.56223    0.2324   2.41912 1.566e-02
## 11    3.677 -0.03187    0.3236  -0.09848 9.216e-01
## 12    4.053  0.32064    0.3111   1.03078 3.028e-01
## 13    4.404  0.54019    0.3157   1.71086 8.729e-02
## 14    4.522  0.59079    0.3266   1.80889 7.064e-02
## 15    5.030  0.84520    0.3208   2.63487 8.493e-03
## 16    5.874  1.11446    0.3658   3.04635 2.352e-03
## 17    3.407  0.08301    0.1688   0.49176 6.230e-01
## 18    3.346  0.07621    0.1453   0.52457 6.000e-01
## 19    3.525  0.18289    0.1706   1.07187 2.839e-01
## 20    2.970 -0.32218    0.1361  -2.36646 1.807e-02
```

sometimes vs. never

```
ns_demo <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work,
       design = svy_never_some,
       family = quasibinomial(link = "logit"))
print_svy_mod(ns_demo)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work, design = svy_never_some, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_some[!is.na(never_some$weight),
##     ])
##
## Coefficients:
##                                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -0.86890    0.43842  -1.982   0.0477 *
## ppagecat25-34                    -0.16824    0.25760  -0.653   0.5138
## ppagecat35-44                    -0.33740    0.25325  -1.332   0.1830
## ppagecat45-54                    -0.23398    0.24717  -0.947   0.3440
## ppagecat55-64                    -0.62973    0.24657  -2.554   0.0108 *
## ppagecat65-74                    -0.27059    0.28752  -0.941   0.3468
## ppagecat75+                      -0.87755    0.48353  -1.815   0.0698 .
## PPEDUCATHigh school              -0.32996    0.27255  -1.211   0.2263
## PPEDUCATSome college              0.42652    0.26473   1.611   0.1074
```

```
## PPEDUCATBachelor_s degree or higher  0.55928    0.26815   2.086   0.0372 *
## income$10k to $25k                  -0.08734    0.39014  -0.224   0.8229
## income$25k to $50k                   0.29968    0.35424   0.846   0.3977
## income$50k to $75k                   0.39828    0.36387   1.095   0.2739
## income$75k to $100k                  0.54574    0.37211   1.467   0.1427
## income$100k to $150k                 0.59808    0.36959   1.618   0.1059
## incomeover $150k                     0.53540    0.40798   1.312   0.1897
## PPREG4Northeast                     -0.05572    0.20960  -0.266   0.7904
## PPREG4South                         -0.22860    0.18411  -1.242   0.2146
## PPREG4West                           0.43145    0.19312   2.234   0.0257 *
## workemployed                        -0.15314    0.16011  -0.956   0.3390
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 0.9956768)
##
## Number of Fisher Scoring iterations: 4
##
##                                    term     or sig or_std_err or_lower
## 1                           (Intercept) 0.4194   *      1.550  -2.6191
## 2                         ppagecat25-34 0.8451          1.294  -1.6907
## 3                         ppagecat35-44 0.7136          1.288  -1.8113
## 4                         ppagecat45-54 0.7914          1.280  -1.7182
## 5                         ppagecat55-64 0.5327   *      1.280  -1.9753
## 6                         ppagecat65-74 0.7629          1.333  -1.8500
## 7                           ppagecat75+ 0.4158   .      1.622  -2.7629
## 8                   PPEDUCATHigh school 0.7190          1.313  -1.8551
## 9                  PPEDUCATSome college 1.5319          1.303  -1.0221
## 10 PPEDUCATBachelor_s degree or higher 1.7494   *      1.308  -0.8134
## 11                   income$10k to $25k 0.9164          1.477  -1.9789
## 12                   income$25k to $50k 1.3494          1.425  -1.4437
## 13                   income$50k to $75k 1.4893          1.439  -1.3310
## 14                  income$75k to $100k 1.7259          1.451  -1.1177
## 15                 income$100k to $150k 1.8186          1.447  -1.0178
## 16                     incomeover $150k 1.7081          1.504  -1.2393
## 17                      PPREG4Northeast 0.9458          1.233  -1.4712
## 18                          PPREG4South 0.7956          1.202  -1.5606
## 19                           PPREG4West 1.5395   *      1.213  -0.8380
## 20                         workemployed 0.8580          1.174  -1.4423
##    or_upper estimate std.error statistic p.value
## 1     3.458 -0.86890    0.4384   -1.9819 0.04772
## 2     3.381 -0.16824    0.2576   -0.6531 0.51380
## 3     3.239 -0.33740    0.2533   -1.3322 0.18303
## 4     3.301 -0.23398    0.2472   -0.9467 0.34400
## 5     3.041 -0.62973    0.2466   -2.5540 0.01077
## 6     3.376 -0.27059    0.2875   -0.9411 0.34684
## 7     3.595 -0.87755    0.4835   -1.8149 0.06979
## 8     3.293 -0.32996    0.2726   -1.2106 0.22628
## 9     4.086  0.42652    0.2647    1.6112 0.10740
## 10    4.312  0.55928    0.2681    2.0857 0.03721
## 11    3.812 -0.08734    0.3901   -0.2239 0.82290
## 12    4.143  0.29968    0.3542    0.8460 0.39772
## 13    4.309  0.39828    0.3639    1.0945 0.27393
## 14    4.569  0.54574    0.3721    1.4666 0.14274
```

```
## 15    4.655  0.59808    0.3696    1.6182 0.10587
## 16    4.656  0.53540    0.4080    1.3123 0.18965
## 17    3.363 -0.05572    0.2096   -0.2658 0.79043
## 18    3.152 -0.22860    0.1841   -1.2416 0.21461
## 19    3.917  0.43145    0.1931    2.2341 0.02565
## 20    3.158 -0.15314    0.1601   -0.9565 0.33901
```

sometimes+every vs. never

```
nse_demo <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work,
       design = svy_never_someevery,
       family = quasibinomial(link = "logit"))
print_svy_mod(nse_demo)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work, design = svy_never_someevery, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_someevery[!is.na(never_someevery$weight),
##     ])
##
## Coefficients:
##                                   Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -0.35017    0.32215  -1.087 0.277165
## ppagecat25-34                     -0.12243    0.21134  -0.579 0.562456
## ppagecat35-44                     -0.10054    0.20422  -0.492 0.622546
## ppagecat45-54                      0.09667    0.19929   0.485 0.627687
## ppagecat55-64                      0.28297    0.19367   1.461 0.144144
## ppagecat65-74                      0.69794    0.21432   3.257 0.001146
## ppagecat75+                        1.12506    0.29206   3.852 0.000121
## PPEDUCATHigh school               -0.01512    0.19489  -0.078 0.938153
## PPEDUCATSome college               0.21655    0.19897   1.088 0.276565
## PPEDUCATBachelor_s degree or higher  0.55083    0.20533   2.683 0.007361
## income$10k to $25k                -0.01750    0.27925  -0.063 0.950044
## income$25k to $50k                 0.31860    0.26522   1.201 0.229789
## income$50k to $75k                 0.48772    0.26983   1.807 0.070830
## income$75k to $100k                0.57717    0.27929   2.067 0.038895
## income$100k to $150k               0.75141    0.27516   2.731 0.006371
## incomeover $150k                   0.93784    0.31411   2.986 0.002861
## PPREG4Northeast                    0.02439    0.15181   0.161 0.872404
## PPREG4South                       -0.03050    0.13238  -0.230 0.817824
## PPREG4West                         0.30264    0.15085   2.006 0.044951
## workemployed                      -0.26498    0.12214  -2.169 0.030159
##
## (Intercept)
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74                     **
## ppagecat75+                       ***
```

```
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher **
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k                  .
## income$75k to $100k                 *
## income$100k to $150k                **
## incomeover $150k                    **
## PPREG4Northeast
## PPREG4South
## PPREG4West                          *
## workemployed                        *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 1.00668)
##
## Number of Fisher Scoring iterations: 4
##
##                                    term     or sig or_std_err or_lower
## 1                           (Intercept) 0.7046          1.380  -2.0004
## 2                         ppagecat25-34 0.8848          1.235  -1.5365
## 3                         ppagecat35-44 0.9044          1.227  -1.4997
## 4                         ppagecat45-54 1.1015          1.221  -1.2908
## 5                         ppagecat55-64 1.3271          1.214  -1.0518
## 6                         ppagecat65-74 2.0096  **      1.239  -0.4189
## 7                           ppagecat75+ 3.0804 ***      1.339   0.4556
## 8                  PPEDUCATHigh school 0.9850          1.215  -1.3968
## 9                 PPEDUCATSome college 1.2418          1.220  -1.1497
## 10 PPEDUCATBachelor_s degree or higher 1.7347  **      1.228  -0.6721
## 11                   income$10k to $25k 0.9827          1.322  -1.6087
## 12                   income$25k to $50k 1.3752          1.304  -1.1801
## 13                   income$50k to $75k 1.6286   .      1.310  -0.9385
## 14                  income$75k to $100k 1.7810   *      1.322  -0.8105
## 15                 income$100k to $150k 2.1200  **      1.317  -0.4608
## 16                     incomeover $150k 2.5545  **      1.369  -0.1288
## 17                      PPREG4Northeast 1.0247          1.164  -1.2566
## 18                          PPREG4South 0.9700          1.142  -1.2675
## 19                           PPREG4West 1.3534   *      1.163  -0.9257
## 20                         workemployed 0.7672   *      1.130  -1.4474
##    or_upper estimate std.error statistic   p.value
## 1     3.410 -0.35017    0.3221  -1.08699 0.2771645
## 2     3.306 -0.12243    0.2113  -0.57929 0.5624560
## 3     3.308 -0.10054    0.2042  -0.49232 0.6225456
## 4     3.494  0.09667    0.1993   0.48506 0.6276867
## 5     3.706  0.28297    0.1937   1.46107 0.1441437
## 6     4.438  0.69794    0.2143   3.25650 0.0011456
## 7     5.705  1.12506    0.2921   3.85214 0.0001205
## 8     3.367 -0.01512    0.1949  -0.07760 0.9381533
## 9     3.633  0.21655    0.1990   1.08835 0.2765655
## 10    4.141  0.55083    0.2053   2.68262 0.0073612
## 11    3.574 -0.01750    0.2792  -0.06266 0.9500436
## 12    3.930  0.31860    0.2652   1.20125 0.2297891
```

```
## 13    4.196  0.48772    0.2698   1.80747 0.0708304
## 14    4.372  0.57717    0.2793   2.06657 0.0388953
## 15    4.701  0.75141    0.2752   2.73076 0.0063709
## 16    5.238  0.93784    0.3141   2.98576 0.0028610
## 17    3.306  0.02439    0.1518   0.16062 0.8724041
## 18    3.207 -0.03050    0.1324  -0.23037 0.8178240
## 19    3.633  0.30264    0.1508   2.00630 0.0449507
## 20    2.982 -0.26498    0.1221  -2.16945 0.0301590
```

Demographic model + Belief (Q20)

every vs. never

```
ne_demo_belief <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20,
       design = svy_never_every,
       family = quasibinomial(link = "logit"))
print_svy_mod(ne_demo_belief)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.111703   0.467912   2.376 0.017618
## ppagecat25-34                      0.257290   0.316924   0.812 0.417000
## ppagecat35-44                      0.286100   0.296855   0.964 0.335298
## ppagecat45-54                      0.652244   0.288885   2.258 0.024085
## ppagecat55-64                      1.071285   0.282470   3.793 0.000154
## ppagecat65-74                      1.718542   0.303408   5.664 1.73e-08
## ppagecat75+                        2.080317   0.389260   5.344 1.03e-07
## PPEDUCATHigh school               -0.140217   0.262998  -0.533 0.594001
## PPEDUCATSome college               0.013590   0.268861   0.051 0.959694
## PPEDUCATBachelor_s degree or higher  0.485933   0.271065   1.793 0.073202
## income$10k to $25k                -0.285509   0.401252  -0.712 0.476845
## income$25k to $50k                 0.177264   0.384890   0.461 0.645175
## income$50k to $75k                 0.383067   0.387103   0.990 0.322523
## income$75k to $100k                0.381543   0.394885   0.966 0.334076
## income$100k to $150k               0.544320   0.392350   1.387 0.165522
## incomeover $150k                   0.760511   0.423591   1.795 0.072769
## PPREG4Northeast                   -0.015898   0.199993  -0.079 0.936649
## PPREG4South                       -0.005494   0.171567  -0.032 0.974459
## PPREG4West                         0.093077   0.190572   0.488 0.625322
## workemployed                      -0.249378   0.154690  -1.612 0.107124
## Q20Somewhat effective             -1.932446   0.216389  -8.930  < 2e-16
## Q20It varies from season to season  -2.657984   0.236578 -11.235  < 2e-16
## Q20Not effective                  -5.157342   0.525368  -9.817  < 2e-16
```

```
## Q20Don_t know                       -4.415717   0.329667 -13.394  < 2e-16
##
## (Intercept)                         *
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54                       *
## ppagecat55-64                       ***
## ppagecat65-74                       ***
## ppagecat75+                         ***
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher .
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k                    .
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective               ***
## Q20It varies from season to season  ***
## Q20Not effective                    ***
## Q20Don_t know                       ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 1.012814)
##
## Number of Fisher Scoring iterations: 5
##
##                                  term       or sig or_std_err or_lower
## 1                          (Intercept) 3.039529   *      1.597 -0.08992
## 2                        ppagecat25-34 1.293420          1.373 -1.39746
## 3                        ppagecat35-44 1.331226          1.346 -1.30619
## 4                        ppagecat45-54 1.919844   *      1.335 -0.69664
## 5                        ppagecat55-64 2.919129 ***      1.326  0.31938
## 6                        ppagecat65-74 5.576390 ***      1.354  2.92163
## 7                          ppagecat75+ 8.007009 ***      1.476  5.11427
## 8                  PPEDUCATHigh school 0.869170          1.301 -1.68044
## 9                 PPEDUCATSome college 1.013682          1.308 -1.55093
## 10 PPEDUCATBachelor_s degree or higher 1.625692   .      1.311 -0.94457
## 11                   income$10k to $25k 0.751632          1.494 -2.17601
## 12                   income$25k to $50k 1.193946          1.469 -1.68618
## 13                   income$50k to $75k 1.466777          1.473 -1.41973
## 14                  income$75k to $100k 1.464543          1.484 -1.44452
## 15                 income$100k to $150k 1.723436          1.480 -1.17826
## 16                     incomeover $150k 2.139370   .      1.527 -0.85441
## 17                      PPREG4Northeast 0.984228          1.221 -1.40970
## 18                          PPREG4South 0.994521          1.187 -1.33232
## 19                           PPREG4West 1.097547          1.210 -1.27394
## 20                         workemployed 0.779286          1.167 -1.50862
```

```
## 21               Q20Somewhat effective 0.144794 ***      1.242 -2.28871
## 22  Q20It varies from season to season 0.070089 ***      1.267 -2.41305
## 23                   Q20Not effective 0.005757 ***      1.691 -3.30876
## 24                      Q20Don_t know 0.012086 ***      1.391 -2.71330
##    or_upper  estimate std.error statistic   p.value
## 1     6.169  1.111703    0.4679   2.37588 1.762e-02
## 2     3.984  0.257290    0.3169   0.81183 4.170e-01
## 3     3.969  0.286100    0.2969   0.96377 3.353e-01
## 4     4.536  0.652244    0.2889   2.25779 2.409e-02
## 5     5.519  1.071285    0.2825   3.79257 1.543e-04
## 6     8.231  1.718542    0.3034   5.66412 1.732e-08
## 7    10.900  2.080317    0.3893   5.34429 1.031e-07
## 8     3.419 -0.140217    0.2630  -0.53315 5.940e-01
## 9     3.578  0.013590    0.2689   0.05054 9.597e-01
## 10    4.196  0.485933    0.2711   1.79268 7.320e-02
## 11    3.679 -0.285509    0.4013  -0.71154 4.768e-01
## 12    4.074  0.177264    0.3849   0.46056 6.452e-01
## 13    4.353  0.383067    0.3871   0.98957 3.225e-01
## 14    4.374  0.381543    0.3949   0.96621 3.341e-01
## 15    4.625  0.544320    0.3923   1.38733 1.655e-01
## 16    5.133  0.760511    0.4236   1.79539 7.277e-02
## 17    3.378 -0.015898    0.2000  -0.07949 9.366e-01
## 18    3.321 -0.005494    0.1716  -0.03202 9.745e-01
## 19    3.469  0.093077    0.1906   0.48841 6.253e-01
## 20    3.067 -0.249378    0.1547  -1.61211 1.071e-01
## 21    2.578 -1.932446    0.2164  -8.93043 1.077e-18
## 22    2.553 -2.657984    0.2366 -11.23512 2.657e-28
## 23    3.320 -5.157342    0.5254  -9.81662 3.665e-22
## 24    2.737 -4.415717    0.3297 -13.39448 5.746e-39
```

sometimes vs. never

```
ns_demo_belief <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20,
       design = svy_never_some,
       family = quasibinomial(link = "logit"))
print_svy_mod(ns_demo_belief)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20, design = svy_never_some, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_some[!is.na(never_some$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        0.342553   0.472241   0.725   0.4684
## ppagecat25-34                      0.089256   0.277557   0.322   0.7478
## ppagecat35-44                     -0.240676   0.264334  -0.910   0.3627
## ppagecat45-54                     -0.117146   0.250290  -0.468   0.6398
## ppagecat55-64                     -0.485524   0.255052  -1.904   0.0572
```

```
## ppagecat65-74                       -0.004515   0.297290  -0.015   0.9879
## ppagecat75+                         -0.601732   0.480598  -1.252   0.2108
## PPEDUCATHigh school                 -0.418800   0.280988  -1.490   0.1364
## PPEDUCATSome college                 0.511144   0.275911   1.853   0.0642
## PPEDUCATBachelor_s degree or higher  0.425203   0.279053   1.524   0.1278
## income$10k to $25k                  -0.157969   0.416059  -0.380   0.7042
## income$25k to $50k                   0.135212   0.372071   0.363   0.7164
## income$50k to $75k                   0.267820   0.388324   0.690   0.4905
## income$75k to $100k                  0.386658   0.392101   0.986   0.3243
## income$100k to $150k                 0.353797   0.384644   0.920   0.3579
## incomeover $150k                     0.374320   0.417745   0.896   0.3704
## PPREG4Northeast                     -0.083956   0.215883  -0.389   0.6974
## PPREG4South                         -0.236242   0.191895  -1.231   0.2185
## PPREG4West                           0.476215   0.202568   2.351   0.0189
## workemployed                        -0.186572   0.169359  -1.102   0.2708
## Q20Somewhat effective               -0.654320   0.272663  -2.400   0.0166
## Q20It varies from season to season  -1.365035   0.293946  -4.644 3.79e-06
## Q20Not effective                    -2.260054   0.387190  -5.837 6.81e-09
## Q20Don_t know                       -2.312482   0.329565  -7.017 3.76e-12
##
## (Intercept)
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64                       .
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college                .
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West                          *
## workemployed
## Q20Somewhat effective               *
## Q20It varies from season to season  ***
## Q20Not effective                    ***
## Q20Don_t know                       ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 0.9903779)
##
## Number of Fisher Scoring iterations: 4
##
##                                term      or sig or_std_err or_lower
## 1                       (Intercept) 1.40854          1.604  -1.7345
## 2                     ppagecat25-34 1.09336          1.320  -1.4936
```

```
## 3                         ppagecat35-44 0.78610         1.303  -1.7669
## 4                         ppagecat45-54 0.88946         1.284  -1.6280
## 5                         ppagecat55-64 0.61537   .     1.291  -1.9141
## 6                         ppagecat65-74 0.99549         1.346  -1.6431
## 7                           ppagecat75+ 0.54786         1.617  -2.6215
## 8                   PPEDUCATHigh school 0.65784         1.324  -1.9381
## 9                  PPEDUCATSome college 1.66720   .     1.318  -0.9156
## 10 PPEDUCATBachelor_s degree or higher 1.52990         1.322  -1.0610
## 11                    income$10k to $25k 0.85388         1.516  -2.1174
## 12                    income$25k to $50k 1.14478         1.451  -1.6987
## 13                    income$50k to $75k 1.30711         1.475  -1.5829
## 14                   income$75k to $100k 1.47205         1.480  -1.4289
## 15                  income$100k to $150k 1.42447         1.469  -1.4550
## 16                      incomeover $150k 1.45400         1.519  -1.5223
## 17                       PPREG4Northeast 0.91947         1.241  -1.5128
## 18                           PPREG4South 0.78959         1.212  -1.5850
## 19                            PPREG4West 1.60997   *     1.225  -0.7901
## 20                          workemployed 0.82980         1.185  -1.4919
## 21                 Q20Somewhat effective 0.51980   *     1.313  -2.0546
## 22  Q20It varies from season to season 0.25537 ***     1.342  -2.3744
## 23                      Q20Not effective 0.10434 ***     1.473  -2.7824
## 24                         Q20Don_t know 0.09902 ***     1.390  -2.6261
##    or_upper  estimate std.error statistic   p.value
## 1     4.552  0.342553    0.4722   0.72538 4.684e-01
## 2     3.680  0.089256    0.2776   0.32158 7.478e-01
## 3     3.339 -0.240676    0.2643  -0.91050 3.627e-01
## 4     3.407 -0.117146    0.2503  -0.46804 6.398e-01
## 5     3.145 -0.485524    0.2551  -1.90363 5.719e-02
## 6     3.634 -0.004515    0.2973  -0.01519 9.879e-01
## 7     3.717 -0.601732    0.4806  -1.25205 2.108e-01
## 8     3.254 -0.418800    0.2810  -1.49046 1.364e-01
## 9     4.250  0.511144    0.2759   1.85257 6.419e-02
## 10    4.121  0.425203    0.2791   1.52373 1.278e-01
## 11    3.825 -0.157969    0.4161  -0.37968 7.042e-01
## 12    3.988  0.135212    0.3721   0.36340 7.164e-01
## 13    4.197  0.267820    0.3883   0.68968 4.905e-01
## 14    4.373  0.386658    0.3921   0.98612 3.243e-01
## 15    4.304  0.353797    0.3846   0.91980 3.579e-01
## 16    4.430  0.374320    0.4177   0.89605 3.704e-01
## 17    3.352 -0.083956    0.2159  -0.38890 6.974e-01
## 18    3.164 -0.236242    0.1919  -1.23110 2.185e-01
## 19    4.010  0.476215    0.2026   2.35089 1.889e-02
## 20    3.152 -0.186572    0.1694  -1.10163 2.708e-01
## 21    3.094 -0.654320    0.2727  -2.39974 1.656e-02
## 22    2.885 -1.365035    0.2939  -4.64383 3.792e-06
## 23    2.991 -2.260054    0.3872  -5.83707 6.809e-09
## 24    2.824 -2.312482    0.3296  -7.01677 3.764e-12
```

sometimes+every vs. never

```
nse_demo_belief <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20,
       design = svy_never_someevery,
```

```
      family = quasibinomial(link = "logit"))
print_svy_mod(nse_demo_belief)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20, design = svy_never_someevery, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_someevery[!is.na(never_someevery$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        1.560743   0.387582   4.027 5.85e-05
## ppagecat25-34                      0.215717   0.250575   0.861 0.389396
## ppagecat35-44                      0.001712   0.235219   0.007 0.994193
## ppagecat45-54                      0.203090   0.225265   0.902 0.367392
## ppagecat55-64                      0.354798   0.219980   1.613 0.106923
## ppagecat65-74                      0.915637   0.240970   3.800 0.000149
## ppagecat75+                        1.145851   0.327454   3.499 0.000476
## PPEDUCATHigh school               -0.144782   0.221305  -0.654 0.513042
## PPEDUCATSome college               0.348094   0.229158   1.519 0.128908
## PPEDUCATBachelor_s degree or higher  0.508423   0.231912   2.192 0.028465
## income$10k to $25k                -0.090667   0.331705  -0.273 0.784620
## income$25k to $50k                 0.226580   0.308746   0.734 0.463108
## income$50k to $75k                 0.389262   0.317248   1.227 0.219960
## income$75k to $100k                0.429722   0.322469   1.333 0.182808
## income$100k to $150k               0.487213   0.320240   1.521 0.128308
## incomeover $150k                   0.675470   0.346260   1.951 0.051218
## PPREG4Northeast                   -0.018486   0.169996  -0.109 0.913417
## PPREG4South                       -0.073798   0.147349  -0.501 0.616536
## PPREG4West                         0.337980   0.166073   2.035 0.041962
## workemployed                      -0.226606   0.136482  -1.660 0.096995
## Q20Somewhat effective             -1.549009   0.212490  -7.290 4.36e-13
## Q20It varies from season to season  -2.268787   0.227127  -9.989  < 2e-16
## Q20Not effective                  -3.758014   0.331932 -11.322  < 2e-16
## Q20Don_t know                     -3.582236   0.264587 -13.539  < 2e-16
##
## (Intercept)                       ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74                     ***
## ppagecat75+                       ***
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher *
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
```

```
## incomeover $150k                    .
## PPREG4Northeast
## PPREG4South
## PPREG4West                          *
## workemployed                        .
## Q20Somewhat effective               ***
## Q20It varies from season to season  ***
## Q20Not effective                    ***
## Q20Don_t know                       ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 0.9815631)
##
## Number of Fisher Scoring iterations: 4
##
##                                    term      or sig or_std_err  or_lower
## 1                           (Intercept) 4.76236 ***      1.473  1.874467
## 2                         ppagecat25-34 1.24075          1.285 -1.277385
## 3                         ppagecat35-44 1.00171          1.265 -1.478050
## 4                         ppagecat45-54 1.22518          1.253 -1.230019
## 5                         ppagecat55-64 1.42589          1.246 -1.016369
## 6                         ppagecat65-74 2.49837 ***      1.272  0.004301
## 7                           ppagecat75+ 3.14512 ***      1.387  0.425754
## 8                  PPEDUCATHigh school 0.86521          1.248 -1.580289
## 9                 PPEDUCATSome college 1.41637          1.258 -1.048414
## 10 PPEDUCATBachelor_s degree or higher 1.66267   *      1.261 -0.808909
## 11                  income$10k to $25k 0.91332          1.393 -1.817628
## 12                  income$25k to $50k 1.25430          1.362 -1.414660
## 13                  income$50k to $75k 1.47589          1.373 -1.215861
## 14                 income$75k to $100k 1.53683          1.381 -1.169015
## 15                income$100k to $150k 1.62777          1.377 -1.072044
## 16                    incomeover $150k 1.96496   .      1.414 -0.806034
## 17                   PPREG4Northeast 0.98168          1.185 -1.341504
## 18                       PPREG4South 0.92886          1.159 -1.342308
## 19                        PPREG4West 1.40211   *      1.181 -0.911980
## 20                       workemployed 0.79723   .      1.146 -1.449385
## 21               Q20Somewhat effective 0.21246 ***      1.237 -2.211579
## 22  Q20It varies from season to season 0.10344 ***      1.255 -2.356342
## 23                    Q20Not effective 0.02333 ***      1.394 -2.708239
## 24                       Q20Don_t know 0.02781 ***      1.303 -2.525857
##    or_upper  estimate std.error  statistic   p.value
## 1     7.650  1.560743    0.3876   4.026875 5.851e-05
## 2     3.759  0.215717    0.2506   0.860890 3.894e-01
## 3     3.481  0.001712    0.2352   0.007279 9.942e-01
## 4     3.680  0.203090    0.2253   0.901562 3.674e-01
## 5     3.868  0.354798    0.2200   1.612865 1.069e-01
## 6     4.992  0.915637    0.2410   3.799799 1.489e-04
## 7     5.864  1.145851    0.3275   3.499279 4.761e-04
## 8     3.311 -0.144782    0.2213  -0.654219 5.130e-01
## 9     3.881  0.348094    0.2292   1.519013 1.289e-01
## 10    4.134  0.508423    0.2319   2.192314 2.847e-02
## 11    3.644 -0.090667    0.3317  -0.273338 7.846e-01
## 12    3.923  0.226580    0.3087   0.733872 4.631e-01
```

```
## 13    4.168  0.389262    0.3172   1.226997 2.200e-01
## 14    4.243  0.429722    0.3225   1.332596 1.828e-01
## 15    4.328  0.487213    0.3202   1.521402 1.283e-01
## 16    4.736  0.675470    0.3463   1.950757 5.122e-02
## 17    3.305 -0.018486    0.1700  -0.108742 9.134e-01
## 18    3.200 -0.073798    0.1473  -0.500840 6.165e-01
## 19    3.716  0.337980    0.1661   2.035126 4.196e-02
## 20    3.044 -0.226606    0.1365  -1.660333 9.700e-02
## 21    2.636 -1.549009    0.2125  -7.289800 4.360e-13
## 22    2.563 -2.268787    0.2271  -9.989061 5.436e-23
## 23    2.755 -3.758014    0.3319 -11.321652 6.800e-29
## 24    2.581 -3.582236    0.2646 -13.538952 4.072e-40
```

F statistic

```
anova(ne_demo, ne_demo_belief, test = 'F')
```

```
## Working (Rao-Scott+F) LRT for Q20
##  in svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20, design = svy_never_every, family = quasibinomial(link = "logit"))
## Working 2logLR =  424.2936 p= < 2.22e-16
## (scale factors:  1.2 0.98 0.96 0.89 );  denominator df= 1698
```

```
anova(ns_demo, ns_demo_belief, test = 'F')
```

```
## Working (Rao-Scott+F) LRT for Q20
##  in svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20, design = svy_never_some, family = quasibinomial(link = "logit"))
## Working 2logLR =  105.0894 p= < 2.22e-16
## (scale factors:  1.1 1 0.96 0.88 );  denominator df= 1215
```

```
anova(nse_demo, nse_demo_belief, test = 'F')
```

```
## Working (Rao-Scott+F) LRT for Q20
##  in svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20, design = svy_never_someevery, family = quasibinomial(link = "logit"))
## Working 2logLR =  360.4446 p= < 2.22e-16
## (scale factors:  1.2 0.98 0.96 0.86 );  denominator df= 2120
```

AIC/BIC

```
AIC(ne_demo, ne_demo_belief)
```

```
##         eff.p      AIC deltabar
## [1,] 22.71370 2227.893 1.195458
## [2,] 26.96941 1712.290 1.172583
```

```
AIC(ns_demo, ns_demo_belief)
```

```
##         eff.p      AIC deltabar
## [1,] 21.81199 1555.697 1.147999
## [2,] 26.21122 1438.047 1.139618
```

```
AIC(nse_demo, nse_demo_belief)
```

```
##         eff.p      AIC deltabar
## [1,] 22.88354 2793.109 1.204397
## [2,] 27.77803 2336.361 1.207741
```

```
BIC(ne_demo, ne_demo_belief, maximal = ne_demo_belief)
```

```
##       p      BIC     neff
## [1,] 20 2054.776 1404.979
## [2,] 24 1837.181      NaN
```

```
BIC(ns_demo, ns_demo_belief, maximal = ns_demo_belief)
```

```
##       p      BIC     neff
## [1,] 20 1620.012 1037.038
## [2,] 24 1556.554      NaN
```

```
BIC(nse_demo, nse_demo_belief, maximal = nse_demo_belief)
```

```
##       p      BIC     neff
## [1,] 20 2698.113 1673.793
## [2,] 24 2464.895      NaN
```

Keep the belief variable.

Social influence and herd immunity (Q15, 16, 17)

every vs. never

```
ne_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q15
       design = svy_never_every,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -2.693e+01  2.916e-01 -92.347   <2e-16
## ppagecat25-34                     4.125e-02  2.042e-01   0.202    0.840
## ppagecat35-44                     8.650e-02  1.920e-01   0.451    0.652
## ppagecat45-54                     1.852e-01  1.809e-01   1.024    0.306
## ppagecat55-64                     1.897e-01  1.722e-01   1.102    0.271
## ppagecat65-74                     2.101e-01  1.772e-01   1.185    0.236
## ppagecat75+                       2.311e-01  1.891e-01   1.222    0.222
## PPEDUCATHigh school               1.644e-01  1.569e-01   1.048    0.295
```

```
## PPEDUCATSome college                 1.919e-01  1.633e-01   1.175    0.240
## PPEDUCATBachelor_s degree or higher  2.515e-01  1.634e-01   1.539    0.124
## income$10k to $25k                   4.000e-02  2.542e-01   0.157    0.875
## income$25k to $50k                   1.044e-02  2.427e-01   0.043    0.966
## income$50k to $75k                   5.129e-02  2.441e-01   0.210    0.834
## income$75k to $100k                  1.691e-02  2.490e-01   0.068    0.946
## income$100k to $150k                 2.704e-02  2.445e-01   0.111    0.912
## incomeover $150k                    -5.900e-04  2.586e-01  -0.002    0.998
## PPREG4Northeast                     -1.617e-03  1.100e-01  -0.015    0.988
## PPREG4South                         -2.119e-02  9.519e-02  -0.223    0.824
## PPREG4West                          -2.088e-02  1.071e-01  -0.195    0.845
## workemployed                        -2.596e-02  8.854e-02  -0.293    0.769
## Q20Somewhat effective                9.039e-03  8.101e-02   0.112    0.911
## Q20It varies from season to season  -8.021e-03  1.132e-01  -0.071    0.944
## Q20Not effective                    -5.644e-03  4.455e-01  -0.013    0.990
## Q20Don_t know                       -4.502e-02  2.528e-01  -0.178    0.859
## Q15No, no effect                     1.674e-03  9.851e-02   0.017    0.986
## Q15No, less likely                  -6.971e-03  2.165e-01  -0.032    0.974
## Q16No, no effect                     2.576e-02  9.514e-02   0.271    0.787
## Q16No, less likely                  -6.917e-03  2.007e-01  -0.034    0.973
## Q17Protect myself and others        -4.996e-03  8.073e-02  -0.062    0.951
## Q17Protect others                   -7.509e-04  4.420e-01  -0.002    0.999
##
## (Intercept)                         ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q15No, no effect
## Q15No, less likely
## Q16No, no effect
## Q16No, less likely
## Q17Protect myself and others
## Q17Protect others
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.45026e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.023e-12 ***      1.339   -2.624
## 2                         ppagecat25-34 1.042e+00          1.227   -1.362
## 3                         ppagecat35-44 1.090e+00          1.212   -1.284
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.209e+00          1.188   -1.119
## 6                         ppagecat65-74 1.234e+00          1.194   -1.106
## 7                           ppagecat75+ 1.260e+00          1.208   -1.108
## 8                   PPEDUCATHigh school 1.179e+00          1.170   -1.114
## 9                  PPEDUCATSome college 1.212e+00          1.177   -1.096
## 10 PPEDUCATBachelor_s degree or higher 1.286e+00          1.178   -1.022
## 11                   income$10k to $25k 1.041e+00          1.289   -1.486
## 12                   income$25k to $50k 1.010e+00          1.275   -1.488
## 13                   income$50k to $75k 1.053e+00          1.276   -1.449
## 14                  income$75k to $100k 1.017e+00          1.283   -1.497
## 15                 income$100k to $150k 1.027e+00          1.277   -1.475
## 16                     incomeover $150k 9.994e-01          1.295   -1.539
## 17                    PPREG4Northeast 9.984e-01          1.116   -1.189
## 18                        PPREG4South 9.790e-01          1.100   -1.177
## 19                         PPREG4West 9.793e-01          1.113   -1.202
## 20                       workemployed 9.744e-01          1.093   -1.167
## 21                Q20Somewhat effective 1.009e+00          1.084   -1.116
## 22  Q20It varies from season to season 9.920e-01          1.120   -1.203
## 23                     Q20Not effective 9.944e-01          1.561   -2.066
## 24                        Q20Don_t know 9.560e-01          1.288   -1.568
## 25                     Q15No, no effect 1.002e+00          1.104   -1.161
## 26                   Q15No, less likely 9.931e-01          1.242   -1.441
## 27                     Q16No, no effect 1.026e+00          1.100   -1.130
## 28                   Q16No, less likely 9.931e-01          1.222   -1.402
## 29         Q17Protect myself and others 9.950e-01          1.084   -1.130
## 30                    Q17Protect others 9.992e-01          1.556   -2.050
##    or_upper   estimate std.error  statistic p.value
## 1     2.624 -2.693e+01   0.29158 -92.347338  0.0000
## 2     3.446  4.125e-02   0.20425   0.201953  0.8400
## 3     3.465  8.650e-02   0.19198   0.450568  0.6524
## 4     3.552  1.852e-01   0.18087   1.023685  0.3063
## 5     3.537  1.897e-01   0.17218   1.101513  0.2710
## 6     3.574  2.101e-01   0.17723   1.185292  0.2362
## 7     3.628  2.311e-01   0.18911   1.222301  0.2219
## 8     3.472  1.644e-01   0.15688   1.047888  0.2950
## 9     3.519  1.919e-01   0.16333   1.174788  0.2404
## 10    3.594  2.515e-01   0.16344   1.538533  0.1243
## 11    3.568  4.000e-02   0.25419   0.157345  0.8750
## 12    3.509  1.044e-02   0.24269   0.043035  0.9657
## 13    3.554  5.129e-02   0.24405   0.210179  0.8336
## 14    3.531  1.691e-02   0.24899   0.067898  0.9459
## 15    3.530  2.704e-02   0.24447   0.110592  0.9120
## 16    3.538 -5.900e-04   0.25856  -0.002282  0.9982
```

```
## 17    3.186 -1.617e-03   0.10996  -0.014702  0.9883
## 18    3.135 -2.119e-02   0.09519  -0.222624  0.8239
## 19    3.161 -2.088e-02   0.10710  -0.194941  0.8455
## 20    3.116 -2.596e-02   0.08854  -0.293215  0.7694
## 21    3.134  9.039e-03   0.08101   0.111569  0.9112
## 22    3.187 -8.021e-03   0.11316  -0.070883  0.9435
## 23    4.054 -5.644e-03   0.44545  -0.012671  0.9899
## 24    3.480 -4.502e-02   0.25279  -0.178102  0.8587
## 25    3.165  1.673e-03   0.09851   0.016987  0.9865
## 26    3.427 -6.970e-03   0.21650  -0.032196  0.9743
## 27    3.182  2.576e-02   0.09514   0.270717  0.7867
## 28    3.389 -6.917e-03   0.20068  -0.034467  0.9725
## 29    3.120 -4.996e-03   0.08073  -0.061885  0.9507
## 30    4.048 -7.509e-04   0.44195  -0.001699  0.9986
```

sometimes vs. never

```
ns_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q15
       design = svy_never_some,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -2.693e+01  2.916e-01 -92.347   <2e-16
## ppagecat25-34                       4.125e-02  2.042e-01   0.202    0.840
## ppagecat35-44                       8.650e-02  1.920e-01   0.451    0.652
## ppagecat45-54                       1.852e-01  1.809e-01   1.024    0.306
## ppagecat55-64                       1.897e-01  1.722e-01   1.102    0.271
## ppagecat65-74                       2.101e-01  1.772e-01   1.185    0.236
## ppagecat75+                         2.311e-01  1.891e-01   1.222    0.222
## PPEDUCATHigh school                 1.644e-01  1.569e-01   1.048    0.295
## PPEDUCATSome college                1.919e-01  1.633e-01   1.175    0.240
## PPEDUCATBachelor_s degree or higher 2.515e-01  1.634e-01   1.539    0.124
## income$10k to $25k                  4.000e-02  2.542e-01   0.157    0.875
## income$25k to $50k                  1.044e-02  2.427e-01   0.043    0.966
## income$50k to $75k                  5.129e-02  2.441e-01   0.210    0.834
## income$75k to $100k                 1.691e-02  2.490e-01   0.068    0.946
## income$100k to $150k                2.704e-02  2.445e-01   0.111    0.912
## incomeover $150k                   -5.900e-04  2.586e-01  -0.002    0.998
## PPREG4Northeast                    -1.617e-03  1.100e-01  -0.015    0.988
## PPREG4South                        -2.119e-02  9.519e-02  -0.223    0.824
```

```
## PPREG4West                           -2.088e-02  1.071e-01  -0.195    0.845
## workemployed                         -2.596e-02  8.854e-02  -0.293    0.769
## Q20Somewhat effective                 9.039e-03  8.101e-02   0.112    0.911
## Q20It varies from season to season   -8.021e-03  1.132e-01  -0.071    0.944
## Q20Not effective                     -5.644e-03  4.455e-01  -0.013    0.990
## Q20Don_t know                        -4.502e-02  2.528e-01  -0.178    0.859
## Q15No, no effect                      1.674e-03  9.851e-02   0.017    0.986
## Q15No, less likely                   -6.971e-03  2.165e-01  -0.032    0.974
## Q16No, no effect                      2.576e-02  9.514e-02   0.271    0.787
## Q16No, less likely                   -6.917e-03  2.007e-01  -0.034    0.973
## Q17Protect myself and others         -4.996e-03  8.073e-02  -0.062    0.951
## Q17Protect others                    -7.509e-04  4.420e-01  -0.002    0.999
##
## (Intercept)                          ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q15No, no effect
## Q15No, less likely
## Q16No, no effect
## Q16No, less likely
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.45026e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                term        or sig or_std_err or_lower
## 1                       (Intercept) 2.023e-12 ***      1.339   -2.624
## 2                     ppagecat25-34 1.042e+00          1.227   -1.362
## 3                     ppagecat35-44 1.090e+00          1.212   -1.284
```

```
## 4                         ppagecat45-54 1.203e+00         1.198   -1.145
## 5                         ppagecat55-64 1.209e+00         1.188   -1.119
## 6                         ppagecat65-74 1.234e+00         1.194   -1.106
## 7                           ppagecat75+ 1.260e+00         1.208   -1.108
## 8                   PPEDUCATHigh school 1.179e+00         1.170   -1.114
## 9                  PPEDUCATSome college 1.212e+00         1.177   -1.096
## 10 PPEDUCATBachelor_s degree or higher 1.286e+00         1.178   -1.022
## 11                  income$10k to $25k 1.041e+00         1.289   -1.486
## 12                  income$25k to $50k 1.010e+00         1.275   -1.488
## 13                  income$50k to $75k 1.053e+00         1.276   -1.449
## 14                 income$75k to $100k 1.017e+00         1.283   -1.497
## 15                income$100k to $150k 1.027e+00         1.277   -1.475
## 16                    incomeover $150k 9.994e-01         1.295   -1.539
## 17                     PPREG4Northeast 9.984e-01         1.116   -1.189
## 18                         PPREG4South 9.790e-01         1.100   -1.177
## 19                          PPREG4West 9.793e-01         1.113   -1.202
## 20                        workemployed 9.744e-01         1.093   -1.167
## 21               Q20Somewhat effective 1.009e+00         1.084   -1.116
## 22  Q20It varies from season to season 9.920e-01         1.120   -1.203
## 23                    Q20Not effective 9.944e-01         1.561   -2.066
## 24                       Q20Don_t know 9.560e-01         1.288   -1.568
## 25                    Q15No, no effect 1.002e+00         1.104   -1.161
## 26                  Q15No, less likely 9.931e-01         1.242   -1.441
## 27                    Q16No, no effect 1.026e+00         1.100   -1.130
## 28                  Q16No, less likely 9.931e-01         1.222   -1.402
## 29        Q17Protect myself and others 9.950e-01         1.084   -1.130
## 30                   Q17Protect others 9.992e-01         1.556   -2.050
##    or_upper   estimate std.error  statistic p.value
## 1     2.624 -2.693e+01   0.29158 -92.347338  0.0000
## 2     3.446  4.125e-02   0.20425   0.201953  0.8400
## 3     3.465  8.650e-02   0.19198   0.450568  0.6524
## 4     3.552  1.852e-01   0.18087   1.023685  0.3063
## 5     3.537  1.897e-01   0.17218   1.101513  0.2710
## 6     3.574  2.101e-01   0.17723   1.185292  0.2362
## 7     3.628  2.311e-01   0.18911   1.222301  0.2219
## 8     3.472  1.644e-01   0.15688   1.047888  0.2950
## 9     3.519  1.919e-01   0.16333   1.174788  0.2404
## 10    3.594  2.515e-01   0.16344   1.538533  0.1243
## 11    3.568  4.000e-02   0.25419   0.157345  0.8750
## 12    3.509  1.044e-02   0.24269   0.043035  0.9657
## 13    3.554  5.129e-02   0.24405   0.210179  0.8336
## 14    3.531  1.691e-02   0.24899   0.067898  0.9459
## 15    3.530  2.704e-02   0.24447   0.110592  0.9120
## 16    3.538 -5.900e-04   0.25856  -0.002282  0.9982
## 17    3.186 -1.617e-03   0.10996  -0.014702  0.9883
## 18    3.135 -2.119e-02   0.09519  -0.222624  0.8239
## 19    3.161 -2.088e-02   0.10710  -0.194941  0.8455
## 20    3.116 -2.596e-02   0.08854  -0.293215  0.7694
## 21    3.134  9.039e-03   0.08101   0.111569  0.9112
## 22    3.187 -8.021e-03   0.11316  -0.070883  0.9435
## 23    4.054 -5.644e-03   0.44545  -0.012671  0.9899
## 24    3.480 -4.502e-02   0.25279  -0.178102  0.8587
## 25    3.165  1.673e-03   0.09851   0.016987  0.9865
## 26    3.427 -6.970e-03   0.21650  -0.032196  0.9743
```

```
## 27    3.182  2.576e-02   0.09514   0.270717  0.7867
## 28    3.389 -6.917e-03   0.20068  -0.034467  0.9725
## 29    3.120 -4.996e-03   0.08073  -0.061885  0.9507
## 30    4.048 -7.509e-04   0.44195  -0.001699  0.9986
```

sometimes+every vs. never

```
nse_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q
       design = svy_never_someevery,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -2.693e+01  2.916e-01 -92.347   <2e-16
## ppagecat25-34                      4.125e-02  2.042e-01   0.202    0.840
## ppagecat35-44                      8.650e-02  1.920e-01   0.451    0.652
## ppagecat45-54                      1.852e-01  1.809e-01   1.024    0.306
## ppagecat55-64                      1.897e-01  1.722e-01   1.102    0.271
## ppagecat65-74                      2.101e-01  1.772e-01   1.185    0.236
## ppagecat75+                        2.311e-01  1.891e-01   1.222    0.222
## PPEDUCATHigh school                1.644e-01  1.569e-01   1.048    0.295
## PPEDUCATSome college               1.919e-01  1.633e-01   1.175    0.240
## PPEDUCATBachelor_s degree or higher  2.515e-01  1.634e-01   1.539    0.124
## income$10k to $25k                 4.000e-02  2.542e-01   0.157    0.875
## income$25k to $50k                 1.044e-02  2.427e-01   0.043    0.966
## income$50k to $75k                 5.129e-02  2.441e-01   0.210    0.834
## income$75k to $100k                1.691e-02  2.490e-01   0.068    0.946
## income$100k to $150k               2.704e-02  2.445e-01   0.111    0.912
## incomeover $150k                  -5.900e-04  2.586e-01  -0.002    0.998
## PPREG4Northeast                   -1.617e-03  1.100e-01  -0.015    0.988
## PPREG4South                       -2.119e-02  9.519e-02  -0.223    0.824
## PPREG4West                        -2.088e-02  1.071e-01  -0.195    0.845
## workemployed                      -2.596e-02  8.854e-02  -0.293    0.769
## Q20Somewhat effective              9.039e-03  8.101e-02   0.112    0.911
## Q20It varies from season to season  -8.021e-03  1.132e-01  -0.071    0.944
## Q20Not effective                  -5.644e-03  4.455e-01  -0.013    0.990
## Q20Don_t know                     -4.502e-02  2.528e-01  -0.178    0.859
## Q15No, no effect                   1.674e-03  9.851e-02   0.017    0.986
## Q15No, less likely                -6.971e-03  2.165e-01  -0.032    0.974
## Q16No, no effect                   2.576e-02  9.514e-02   0.271    0.787
## Q16No, less likely                -6.917e-03  2.007e-01  -0.034    0.973
```

```
## Q17Protect myself and others        -4.996e-03  8.073e-02  -0.062    0.951
## Q17Protect others                   -7.509e-04  4.420e-01  -0.002    0.999
##
## (Intercept)                         ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q15No, no effect
## Q15No, less likely
## Q16No, no effect
## Q16No, less likely
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.45026e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.023e-12 ***      1.339   -2.624
## 2                         ppagecat25-34 1.042e+00          1.227   -1.362
## 3                         ppagecat35-44 1.090e+00          1.212   -1.284
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.209e+00          1.188   -1.119
## 6                         ppagecat65-74 1.234e+00          1.194   -1.106
## 7                           ppagecat75+ 1.260e+00          1.208   -1.108
## 8                   PPEDUCATHigh school 1.179e+00          1.170   -1.114
## 9                  PPEDUCATSome college 1.212e+00          1.177   -1.096
## 10 PPEDUCATBachelor_s degree or higher 1.286e+00          1.178   -1.022
## 11                   income$10k to $25k 1.041e+00          1.289   -1.486
## 12                   income$25k to $50k 1.010e+00          1.275   -1.488
## 13                   income$50k to $75k 1.053e+00          1.276   -1.449
```

```
## 14                 income$75k to $100k 1.017e+00         1.283   -1.497
## 15                income$100k to $150k 1.027e+00         1.277   -1.475
## 16                    incomeover $150k 9.994e-01         1.295   -1.539
## 17                     PPREG4Northeast 9.984e-01         1.116   -1.189
## 18                         PPREG4South 9.790e-01         1.100   -1.177
## 19                          PPREG4West 9.793e-01         1.113   -1.202
## 20                       workemployed 9.744e-01         1.093   -1.167
## 21               Q20Somewhat effective 1.009e+00         1.084   -1.116
## 22  Q20It varies from season to season 9.920e-01         1.120   -1.203
## 23                    Q20Not effective 9.944e-01         1.561   -2.066
## 24                       Q20Don_t know 9.560e-01         1.288   -1.568
## 25                    Q15No, no effect 1.002e+00         1.104   -1.161
## 26                  Q15No, less likely 9.931e-01         1.242   -1.441
## 27                    Q16No, no effect 1.026e+00         1.100   -1.130
## 28                  Q16No, less likely 9.931e-01         1.222   -1.402
## 29        Q17Protect myself and others 9.950e-01         1.084   -1.130
## 30                   Q17Protect others 9.992e-01         1.556   -2.050
##    or_upper   estimate std.error  statistic p.value
## 1     2.624 -2.693e+01   0.29158 -92.347338  0.0000
## 2     3.446  4.125e-02   0.20425   0.201953  0.8400
## 3     3.465  8.650e-02   0.19198   0.450568  0.6524
## 4     3.552  1.852e-01   0.18087   1.023685  0.3063
## 5     3.537  1.897e-01   0.17218   1.101513  0.2710
## 6     3.574  2.101e-01   0.17723   1.185292  0.2362
## 7     3.628  2.311e-01   0.18911   1.222301  0.2219
## 8     3.472  1.644e-01   0.15688   1.047888  0.2950
## 9     3.519  1.919e-01   0.16333   1.174788  0.2404
## 10    3.594  2.515e-01   0.16344   1.538533  0.1243
## 11    3.568  4.000e-02   0.25419   0.157345  0.8750
## 12    3.509  1.044e-02   0.24269   0.043035  0.9657
## 13    3.554  5.129e-02   0.24405   0.210179  0.8336
## 14    3.531  1.691e-02   0.24899   0.067898  0.9459
## 15    3.530  2.704e-02   0.24447   0.110592  0.9120
## 16    3.538 -5.900e-04   0.25856  -0.002282  0.9982
## 17    3.186 -1.617e-03   0.10996  -0.014702  0.9883
## 18    3.135 -2.119e-02   0.09519  -0.222624  0.8239
## 19    3.161 -2.088e-02   0.10710  -0.194941  0.8455
## 20    3.116 -2.596e-02   0.08854  -0.293215  0.7694
## 21    3.134  9.039e-03   0.08101   0.111569  0.9112
## 22    3.187 -8.021e-03   0.11316  -0.070883  0.9435
## 23    4.054 -5.644e-03   0.44545  -0.012671  0.9899
## 24    3.480 -4.502e-02   0.25279  -0.178102  0.8587
## 25    3.165  1.673e-03   0.09851   0.016987  0.9865
## 26    3.427 -6.970e-03   0.21650  -0.032196  0.9743
## 27    3.182  2.576e-02   0.09514   0.270717  0.7867
## 28    3.389 -6.917e-03   0.20068  -0.034467  0.9725
## 29    3.120 -4.996e-03   0.08073  -0.061885  0.9507
## 30    4.048 -7.509e-04   0.44195  -0.001699  0.9986
```

sometimes vs every

```r
se_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q15
       design = svy_some_every,
       family = quasibinomial(link = "logit"))
print_svy_mod(se_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_some_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = some_every[!is.na(some_every$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                         0.88747    0.66112   1.342 0.179710
## ppagecat25-34                       0.08441    0.32935   0.256 0.797759
## ppagecat35-44                       0.44295    0.31211   1.419 0.156087
## ppagecat45-54                       0.53434    0.30118   1.774 0.076273
## ppagecat55-64                       1.26262    0.29120   4.336 1.57e-05
## ppagecat65-74                       1.56814    0.32296   4.855 1.35e-06
## ppagecat75+                         2.38301    0.45055   5.289 1.44e-07
## PPEDUCATHigh school                 0.38074    0.32299   1.179 0.238695
## PPEDUCATSome college               -0.34230    0.31503  -1.087 0.277429
## PPEDUCATBachelor_s degree or higher 0.07294    0.32405   0.225 0.821945
## income$10k to $25k                  0.26675    0.53090   0.502 0.615434
## income$25k to $50k                  0.40267    0.51396   0.783 0.433501
## income$50k to $75k                  0.58473    0.51412   1.137 0.255604
## income$75k to $100k                 0.38522    0.52220   0.738 0.460837
## income$100k to $150k                0.53958    0.51625   1.045 0.296136
## incomeover $150k                    0.81674    0.53185   1.536 0.124868
## PPREG4Northeast                    -0.05313    0.23188  -0.229 0.818826
## PPREG4South                         0.10034    0.20311   0.494 0.621363
## PPREG4West                         -0.34905    0.21209  -1.646 0.100060
## workemployed                       -0.12694    0.17113  -0.742 0.458346
## Q20Somewhat effective              -1.29642    0.20424  -6.348 3.03e-10
## Q20It varies from season to season -1.36430    0.23855  -5.719 1.33e-08
## Q20Not effective                   -1.95679    0.64569  -3.031 0.002490
## Q20Don_t know                      -2.18393    0.39468  -5.533 3.81e-08
## Q15No, no effect                    0.29685    0.20184   1.471 0.141598
## Q15No, less likely                  0.07716    0.36710   0.210 0.833566
## Q16No, no effect                   -0.72761    0.21109  -3.447 0.000585
## Q16No, less likely                 -1.44622    0.32419  -4.461 8.87e-06
## Q17Protect myself and others        0.25287    0.15616   1.619 0.105613
## Q17Protect others                  -0.92209    0.42587  -2.165 0.030557
##
## (Intercept)
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54                      .
## ppagecat55-64                      ***
## ppagecat65-74                      ***
## ppagecat75+                        ***
```

```
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective               ***
## Q20It varies from season to season  ***
## Q20Not effective                    **
## Q20Don_t know                       ***
## Q15No, no effect
## Q15No, less likely
## Q16No, no effect                    ***
## Q16No, less likely                  ***
## Q17Protect myself and others
## Q17Protect others                   *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 1.007552)
##
## Number of Fisher Scoring iterations: 5
##
##                                  term      or sig or_std_err or_lower
## 1                           (Intercept)  2.4290          1.937  -1.3674
## 2                         ppagecat25-34  1.0881          1.390  -1.6365
## 3                         ppagecat35-44  1.5573          1.366  -1.1207
## 4                         ppagecat45-54  1.7063   .      1.351  -0.9425
## 5                         ppagecat55-64  3.5347 ***      1.338   0.9121
## 6                         ppagecat65-74  4.7977 ***      1.381   2.0905
## 7                           ppagecat75+ 10.8375 ***      1.569   7.7619
## 8                   PPEDUCATHigh school  1.4634          1.381  -1.2439
## 9                  PPEDUCATSome college  0.7101          1.370  -1.9756
## 10 PPEDUCATBachelor_s degree or higher  1.0757          1.383  -1.6345
## 11                   income$10k to $25k  1.3057          1.700  -2.0272
## 12                   income$25k to $50k  1.4958          1.672  -1.7811
## 13                   income$50k to $75k  1.7945          1.672  -1.4829
## 14                  income$75k to $100k  1.4699          1.686  -1.8341
## 15                 income$100k to $150k  1.7153          1.676  -1.5692
## 16                     incomeover $150k  2.2631          1.702  -1.0730
## 17                      PPREG4Northeast  0.9483          1.261  -1.5232
## 18                          PPREG4South  1.1056          1.225  -1.2958
## 19                           PPREG4West  0.7054          1.236  -1.7177
## 20                         workemployed  0.8808          1.187  -1.4450
## 21                Q20Somewhat effective  0.2735 ***      1.227  -2.1306
## 22  Q20It varies from season to season  0.2556 ***      1.269  -2.2325
## 23                     Q20Not effective  0.1413  **      1.907  -3.5970
```

```
## 24                      Q20Don_t know  0.1126 ***      1.484  -2.7959
## 25                   Q15No, no effect  1.3456          1.224  -1.0527
## 26                  Q15No, less likely  1.0802          1.444  -1.7491
## 27                   Q16No, no effect  0.4831 ***      1.235  -1.9376
## 28                  Q16No, less likely  0.2355 ***      1.383  -2.4750
## 29        Q17Protect myself and others  1.2877          1.169  -1.0035
## 30                   Q17Protect others  0.3977   *      1.531  -2.6029
##    or_upper estimate std.error statistic   p.value
## 1     6.225  0.88747    0.6611    1.3424 1.797e-01
## 2     3.813  0.08441    0.3294    0.2563 7.978e-01
## 3     4.235  0.44295    0.3121    1.4192 1.561e-01
## 4     4.355  0.53434    0.3012    1.7742 7.627e-02
## 5     6.157  1.26262    0.2912    4.3359 1.566e-05
## 6     7.505  1.56814    0.3230    4.8555 1.349e-06
## 7    13.913  2.38301    0.4505    5.2891 1.445e-07
## 8     4.171  0.38074    0.3230    1.1788 2.387e-01
## 9     3.396 -0.34230    0.3150   -1.0866 2.774e-01
## 10    3.786  0.07294    0.3240    0.2251 8.219e-01
## 11    4.639  0.26675    0.5309    0.5025 6.154e-01
## 12    4.773  0.40267    0.5140    0.7835 4.335e-01
## 13    5.072  0.58473    0.5141    1.1374 2.556e-01
## 14    4.774  0.38522    0.5222    0.7377 4.608e-01
## 15    5.000  0.53958    0.5163    1.0452 2.961e-01
## 16    5.599  0.81674    0.5318    1.5357 1.249e-01
## 17    3.420 -0.05313    0.2319   -0.2291 8.188e-01
## 18    3.507  0.10034    0.2031    0.4940 6.214e-01
## 19    3.128 -0.34905    0.2121   -1.6458 1.001e-01
## 20    3.207 -0.12694    0.1711   -0.7418 4.583e-01
## 21    2.678 -1.29642    0.2042   -6.3476 3.031e-10
## 22    2.744 -1.36430    0.2385   -5.7192 1.332e-08
## 23    3.880 -1.95679    0.6457   -3.0305 2.490e-03
## 24    3.021 -2.18393    0.3947   -5.5334 3.807e-08
## 25    3.744  0.29685    0.2018    1.4708 1.416e-01
## 26    3.910  0.07716    0.3671    0.2102 8.336e-01
## 27    2.904 -0.72761    0.2111   -3.4470 5.853e-04
## 28    2.946 -1.44622    0.3242   -4.4610 8.875e-06
## 29    3.579  0.25287    0.1562    1.6194 1.056e-01
## 30    3.398 -0.92209    0.4259   -2.1652 3.056e-02
```

F statistic

```
anova(ne_demo_belief_social, ne_demo_belief, test = 'F')
```

```
## Working (Rao-Scott+F) LRT for Q15 Q16 Q17
##  in svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
## Working 2logLR =  1.970881e+14 p= < 2.22e-16
## (scale factors:  1.1 1 1 0.99 0.94 0.93 );  denominator df= 862
```

```
anova(ns_demo_belief_social, ns_demo_belief, test = 'F')
```

```
## Working (Rao-Scott+F) LRT for Q15 Q16 Q17
##  in svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_never_some, family = quasibinomial(link = "logit"))
```

```
## Working 2logLR =  1.623777e+14 p= < 2.22e-16
## (scale factors:  1.1 1 1 0.98 0.96 0.93 );  denominator df= 386
```

```
anova(nse_demo_belief_social, nse_demo_belief, test = 'F')
```

```
## Working (Rao-Scott+F) LRT for Q15 Q16 Q17
##  in svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q15 + Q16 + Q17, design = svy_never_someevery,
##     family = quasibinomial(link = "logit"))
## Working 2logLR =  2.65365e+14 p= < 2.22e-16
## (scale factors:  1.1 1 1 0.97 0.95 0.92 );  denominator df= 1278
```

AIC/BIC

```
AIC(ne_demo, ne_demo_belief, ne_demo_belief_social)
```

```
##             eff.p          AIC     deltabar
## [1,] 2.271370e+01 2.227893e+03 1.195458e+00
## [2,] 2.696941e+01 1.712290e+03 1.172583e+00
## [3,] 2.429626e-10 5.314229e-09 8.378020e-12
```

```
AIC(ns_demo, ns_demo_belief, ns_demo_belief_social)
```

```
##             eff.p          AIC     deltabar
## [1,] 2.181199e+01 1.555697e+03 1.147999e+00
## [2,] 2.621122e+01 1.438047e+03 1.139618e+00
## [3,] 2.451344e-10 2.834313e-09 8.452911e-12
```

```
AIC(nse_demo, nse_demo_belief, se_demo_belief_social)
```

```
##         eff.p      AIC deltabar
## [1,] 22.88354 2793.109 1.204397
## [2,] 27.77803 2336.361 1.207741
## [3,] 35.26805 1436.213 1.216140
```

```
BIC(ne_demo, ne_demo_belief, ne_demo_belief_social, maximal = ne_demo_belief_social)
```

```
##       p        BIC         neff
## [1,] 20 -105.70830 2.050901e+14
## [2,] 24   25.95473 2.049870e+14
## [3,] 30  203.80398          NaN
```

```
BIC(ns_demo, ns_demo_belief, ns_demo_belief_social, maximal = ns_demo_belief_social)
```

```
##       p        BIC         neff
## [1,] 20 -112.03690 1.449320e+14
## [2,] 24   18.08649 1.453673e+14
## [3,] 30  180.92056          NaN
```

```
BIC(nse_demo, nse_demo_belief, se_demo_belief_social, maximal = se_demo_belief_social)
```

```
##       p      BIC     neff
## [1,] 20 1613.851 1830.200
## [2,] 24 1588.922 1874.308
## [3,] 30 1580.964      NaN
```

Drop the Social influence and herd immunity variables.

Social influence and herd immunity Sub

every vs. never

```
ne_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q1
       design = svy_never_every,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -26.918869   0.287361 -93.676   <2e-16
## ppagecat25-34                      0.043153   0.203678   0.212    0.832
## ppagecat35-44                      0.087126   0.190868   0.456    0.648
## ppagecat45-54                      0.184541   0.180518   1.022    0.307
## ppagecat55-64                      0.191401   0.170839   1.120    0.263
## ppagecat65-74                      0.213515   0.175366   1.218    0.224
## ppagecat75+                        0.235870   0.188101   1.254    0.210
## PPEDUCATHigh school                0.165529   0.155034   1.068    0.286
## PPEDUCATSome college               0.195378   0.160797   1.215    0.225
## PPEDUCATBachelor_s degree or higher   0.254270   0.160346   1.586    0.113
## income$10k to $25k                 0.043147   0.252872   0.171    0.865
## income$25k to $50k                 0.015673   0.241878   0.065    0.948
## income$50k to $75k                 0.057215   0.243267   0.235    0.814
## income$75k to $100k                0.024112   0.247778   0.097    0.923
## income$100k to $150k               0.033550   0.243329   0.138    0.890
## incomeover $150k                   0.006603   0.257373   0.026    0.980
## PPREG4Northeast                   -0.004500   0.109306  -0.041    0.967
## PPREG4South                       -0.022113   0.094810  -0.233    0.816
## PPREG4West                        -0.022002   0.106567  -0.206    0.836
## workemployed                      -0.024834   0.088264  -0.281    0.779
## Q20Somewhat effective              0.010332   0.080464   0.128    0.898
## Q20It varies from season to season   -0.002182   0.111120  -0.020    0.984
## Q20Not effective                  -0.013460   0.436733  -0.031    0.975
## Q20Don_t know                     -0.044878   0.252487  -0.178    0.859
## Q17Protect myself and others      -0.005260   0.080146  -0.066    0.948
## Q17Protect others                 -0.005066   0.437928  -0.012    0.991
##
## (Intercept)                       ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
```

```
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.246607e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.038e-12 ***      1.333   -2.612
## 2                         ppagecat25-34 1.044e+00          1.226   -1.359
## 3                         ppagecat35-44 1.091e+00          1.210   -1.281
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.211e+00          1.186   -1.114
## 6                         ppagecat65-74 1.238e+00          1.192   -1.098
## 7                           ppagecat75+ 1.266e+00          1.207   -1.100
## 8                   PPEDUCATHigh school 1.180e+00          1.168   -1.109
## 9                  PPEDUCATSome college 1.216e+00          1.174   -1.086
## 10 PPEDUCATBachelor_s degree or higher 1.290e+00          1.174   -1.011
## 11                   income$10k to $25k 1.044e+00          1.288   -1.480
## 12                   income$25k to $50k 1.016e+00          1.274   -1.481
## 13                   income$50k to $75k 1.059e+00          1.275   -1.441
## 14                  income$75k to $100k 1.024e+00          1.281   -1.487
## 15                 income$100k to $150k 1.034e+00          1.275   -1.466
## 16                     incomeover $150k 1.007e+00          1.294   -1.529
## 17                      PPREG4Northeast 9.955e-01          1.116   -1.191
## 18                          PPREG4South 9.781e-01          1.099   -1.177
## 19                           PPREG4West 9.782e-01          1.112   -1.202
## 20                          workemployed 9.755e-01          1.092   -1.165
## 21                Q20Somewhat effective 1.010e+00          1.084   -1.114
## 22  Q20It varies from season to season 9.978e-01          1.118   -1.193
## 23                     Q20Not effective 9.866e-01          1.548   -2.047
## 24                        Q20Don_t know 9.561e-01          1.287   -1.567
```

```
## 25        Q17Protect myself and others 9.948e-01          1.083   -1.129
## 26                   Q17Protect others 9.949e-01          1.549   -2.042
##    or_upper   estimate std.error statistic p.value
## 1     2.612 -26.918869   0.28736 -93.67604  0.0000
## 2     3.447   0.043153   0.20368   0.21187  0.8323
## 3     3.463   0.087126   0.19087   0.45647  0.6482
## 4     3.550   0.184541   0.18052   1.02229  0.3069
## 5     3.536   0.191401   0.17084   1.12036  0.2629
## 6     3.574   0.213515   0.17537   1.21754  0.2237
## 7     3.632   0.235870   0.18810   1.25395  0.2102
## 8     3.469   0.165529   0.15503   1.06769  0.2860
## 9     3.518   0.195378   0.16080   1.21506  0.2247
## 10    3.590   0.254270   0.16035   1.58575  0.1132
## 11    3.568   0.043147   0.25287   0.17063  0.8646
## 12    3.512   0.015673   0.24188   0.06480  0.9484
## 13    3.559   0.057215   0.24327   0.23519  0.8141
## 14    3.536   0.024112   0.24778   0.09731  0.9225
## 15    3.534   0.033550   0.24333   0.13788  0.8904
## 16    3.542   0.006603   0.25737   0.02565  0.9795
## 17    3.182  -0.004500   0.10931  -0.04117  0.9672
## 18    3.133  -0.022113   0.09481  -0.23323  0.8156
## 19    3.159  -0.022002   0.10657  -0.20646  0.8365
## 20    3.116  -0.024834   0.08826  -0.28136  0.7785
## 21    3.135   0.010332   0.08046   0.12840  0.8979
## 22    3.188  -0.002182   0.11112  -0.01964  0.9843
## 23    4.020  -0.013460   0.43673  -0.03082  0.9754
## 24    3.479  -0.044878   0.25249  -0.17774  0.8590
## 25    3.118  -0.005260   0.08015  -0.06563  0.9477
## 26    4.032  -0.005066   0.43793  -0.01157  0.9908
```

sometimes vs. never

```
ns_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q15
       design = svy_never_some,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -26.918869   0.287361 -93.676   <2e-16
## ppagecat25-34                      0.043153   0.203678   0.212    0.832
## ppagecat35-44                      0.087126   0.190868   0.456    0.648
```

```
## ppagecat45-54                          0.184541   0.180518   1.022    0.307
## ppagecat55-64                          0.191401   0.170839   1.120    0.263
## ppagecat65-74                          0.213515   0.175366   1.218    0.224
## ppagecat75+                            0.235870   0.188101   1.254    0.210
## PPEDUCATHigh school                    0.165529   0.155034   1.068    0.286
## PPEDUCATSome college                   0.195378   0.160797   1.215    0.225
## PPEDUCATBachelor_s degree or higher    0.254270   0.160346   1.586    0.113
## income$10k to $25k                     0.043147   0.252872   0.171    0.865
## income$25k to $50k                     0.015673   0.241878   0.065    0.948
## income$50k to $75k                     0.057215   0.243267   0.235    0.814
## income$75k to $100k                    0.024112   0.247778   0.097    0.923
## income$100k to $150k                   0.033550   0.243329   0.138    0.890
## incomeover $150k                       0.006603   0.257373   0.026    0.980
## PPREG4Northeast                       -0.004500   0.109306  -0.041    0.967
## PPREG4South                           -0.022113   0.094810  -0.233    0.816
## PPREG4West                            -0.022002   0.106567  -0.206    0.836
## workemployed                          -0.024834   0.088264  -0.281    0.779
## Q20Somewhat effective                  0.010332   0.080464   0.128    0.898
## Q20It varies from season to season    -0.002182   0.111120  -0.020    0.984
## Q20Not effective                      -0.013460   0.436733  -0.031    0.975
## Q20Don_t know                         -0.044878   0.252487  -0.178    0.859
## Q17Protect myself and others          -0.005260   0.080146  -0.066    0.948
## Q17Protect others                     -0.005066   0.437928  -0.012    0.991
##
## (Intercept)                          ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.246607e-15)
```

```
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.038e-12 ***      1.333   -2.612
## 2                         ppagecat25-34 1.044e+00          1.226   -1.359
## 3                         ppagecat35-44 1.091e+00          1.210   -1.281
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.211e+00          1.186   -1.114
## 6                         ppagecat65-74 1.238e+00          1.192   -1.098
## 7                           ppagecat75+ 1.266e+00          1.207   -1.100
## 8                   PPEDUCATHigh school 1.180e+00          1.168   -1.109
## 9                  PPEDUCATSome college 1.216e+00          1.174   -1.086
## 10 PPEDUCATBachelor_s degree or higher 1.290e+00          1.174   -1.011
## 11                   income$10k to $25k 1.044e+00          1.288   -1.480
## 12                   income$25k to $50k 1.016e+00          1.274   -1.481
## 13                   income$50k to $75k 1.059e+00          1.275   -1.441
## 14                  income$75k to $100k 1.024e+00          1.281   -1.487
## 15                 income$100k to $150k 1.034e+00          1.275   -1.466
## 16                     incomeover $150k 1.007e+00          1.294   -1.529
## 17                      PPREG4Northeast 9.955e-01          1.116   -1.191
## 18                          PPREG4South 9.781e-01          1.099   -1.177
## 19                          PPREG4West 9.782e-01          1.112   -1.202
## 20                        workemployed 9.755e-01          1.092   -1.165
## 21                Q20Somewhat effective 1.010e+00          1.084   -1.114
## 22  Q20It varies from season to season 9.978e-01          1.118   -1.193
## 23                     Q20Not effective 9.866e-01          1.548   -2.047
## 24                        Q20Don_t know 9.561e-01          1.287   -1.567
## 25        Q17Protect myself and others 9.948e-01          1.083   -1.129
## 26                     Q17Protect others 9.949e-01          1.549   -2.042
##    or_upper   estimate std.error statistic p.value
## 1     2.612 -26.918869   0.28736 -93.67604  0.0000
## 2     3.447   0.043153   0.20368   0.21187  0.8323
## 3     3.463   0.087126   0.19087   0.45647  0.6482
## 4     3.550   0.184541   0.18052   1.02229  0.3069
## 5     3.536   0.191401   0.17084   1.12036  0.2629
## 6     3.574   0.213515   0.17537   1.21754  0.2237
## 7     3.632   0.235870   0.18810   1.25395  0.2102
## 8     3.469   0.165529   0.15503   1.06769  0.2860
## 9     3.518   0.195378   0.16080   1.21506  0.2247
## 10    3.590   0.254270   0.16035   1.58575  0.1132
## 11    3.568   0.043147   0.25287   0.17063  0.8646
## 12    3.512   0.015673   0.24188   0.06480  0.9484
## 13    3.559   0.057215   0.24327   0.23519  0.8141
## 14    3.536   0.024112   0.24778   0.09731  0.9225
## 15    3.534   0.033550   0.24333   0.13788  0.8904
## 16    3.542   0.006603   0.25737   0.02565  0.9795
## 17    3.182  -0.004500   0.10931  -0.04117  0.9672
## 18    3.133  -0.022113   0.09481  -0.23323  0.8156
## 19    3.159  -0.022002   0.10657  -0.20646  0.8365
## 20    3.116  -0.024834   0.08826  -0.28136  0.7785
## 21    3.135   0.010332   0.08046   0.12840  0.8979
## 22    3.188  -0.002182   0.11112  -0.01964  0.9843
## 23    4.020  -0.013460   0.43673  -0.03082  0.9754
```

```
## 24    3.479  -0.044878   0.25249  -0.17774  0.8590
## 25    3.118  -0.005260   0.08015  -0.06563  0.9477
## 26    4.032  -0.005066   0.43793  -0.01157  0.9908
```

sometimes+every vs. never

```
nse_demo_belief_social <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q
       design = svy_never_someevery,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -26.918869   0.287361 -93.676   <2e-16
## ppagecat25-34                       0.043153   0.203678   0.212    0.832
## ppagecat35-44                       0.087126   0.190868   0.456    0.648
## ppagecat45-54                       0.184541   0.180518   1.022    0.307
## ppagecat55-64                       0.191401   0.170839   1.120    0.263
## ppagecat65-74                       0.213515   0.175366   1.218    0.224
## ppagecat75+                         0.235870   0.188101   1.254    0.210
## PPEDUCATHigh school                 0.165529   0.155034   1.068    0.286
## PPEDUCATSome college                0.195378   0.160797   1.215    0.225
## PPEDUCATBachelor_s degree or higher 0.254270   0.160346   1.586    0.113
## income$10k to $25k                  0.043147   0.252872   0.171    0.865
## income$25k to $50k                  0.015673   0.241878   0.065    0.948
## income$50k to $75k                  0.057215   0.243267   0.235    0.814
## income$75k to $100k                 0.024112   0.247778   0.097    0.923
## income$100k to $150k                0.033550   0.243329   0.138    0.890
## incomeover $150k                    0.006603   0.257373   0.026    0.980
## PPREG4Northeast                    -0.004500   0.109306  -0.041    0.967
## PPREG4South                        -0.022113   0.094810  -0.233    0.816
## PPREG4West                         -0.022002   0.106567  -0.206    0.836
## workemployed                       -0.024834   0.088264  -0.281    0.779
## Q20Somewhat effective               0.010332   0.080464   0.128    0.898
## Q20It varies from season to season -0.002182   0.111120  -0.020    0.984
## Q20Not effective                   -0.013460   0.436733  -0.031    0.975
## Q20Don_t know                      -0.044878   0.252487  -0.178    0.859
## Q17Protect myself and others       -0.005260   0.080146  -0.066    0.948
## Q17Protect others                  -0.005066   0.437928  -0.012    0.991
##
## (Intercept)                       ***
## ppagecat25-34
```

```
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.246607e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.038e-12 ***      1.333   -2.612
## 2                         ppagecat25-34 1.044e+00          1.226   -1.359
## 3                         ppagecat35-44 1.091e+00          1.210   -1.281
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.211e+00          1.186   -1.114
## 6                         ppagecat65-74 1.238e+00          1.192   -1.098
## 7                           ppagecat75+ 1.266e+00          1.207   -1.100
## 8                   PPEDUCATHigh school 1.180e+00          1.168   -1.109
## 9                  PPEDUCATSome college 1.216e+00          1.174   -1.086
## 10 PPEDUCATBachelor_s degree or higher 1.290e+00          1.174   -1.011
## 11                   income$10k to $25k 1.044e+00          1.288   -1.480
## 12                   income$25k to $50k 1.016e+00          1.274   -1.481
## 13                   income$50k to $75k 1.059e+00          1.275   -1.441
## 14                  income$75k to $100k 1.024e+00          1.281   -1.487
## 15                 income$100k to $150k 1.034e+00          1.275   -1.466
## 16                     incomeover $150k 1.007e+00          1.294   -1.529
## 17                    PPREG4Northeast 9.955e-01          1.116   -1.191
## 18                        PPREG4South 9.781e-01          1.099   -1.177
## 19                         PPREG4West 9.782e-01          1.112   -1.202
## 20                       workemployed 9.755e-01          1.092   -1.165
## 21                Q20Somewhat effective 1.010e+00          1.084   -1.114
## 22  Q20It varies from season to season 9.978e-01          1.118   -1.193
```

```
## 23                    Q20Not effective 9.866e-01          1.548   -2.047
## 24                       Q20Don_t know 9.561e-01          1.287   -1.567
## 25        Q17Protect myself and others 9.948e-01          1.083   -1.129
## 26                    Q17Protect others 9.949e-01          1.549   -2.042
##    or_upper   estimate std.error statistic p.value
## 1     2.612 -26.918869   0.28736 -93.67604  0.0000
## 2     3.447   0.043153   0.20368   0.21187  0.8323
## 3     3.463   0.087126   0.19087   0.45647  0.6482
## 4     3.550   0.184541   0.18052   1.02229  0.3069
## 5     3.536   0.191401   0.17084   1.12036  0.2629
## 6     3.574   0.213515   0.17537   1.21754  0.2237
## 7     3.632   0.235870   0.18810   1.25395  0.2102
## 8     3.469   0.165529   0.15503   1.06769  0.2860
## 9     3.518   0.195378   0.16080   1.21506  0.2247
## 10    3.590   0.254270   0.16035   1.58575  0.1132
## 11    3.568   0.043147   0.25287   0.17063  0.8646
## 12    3.512   0.015673   0.24188   0.06480  0.9484
## 13    3.559   0.057215   0.24327   0.23519  0.8141
## 14    3.536   0.024112   0.24778   0.09731  0.9225
## 15    3.534   0.033550   0.24333   0.13788  0.8904
## 16    3.542   0.006603   0.25737   0.02565  0.9795
## 17    3.182  -0.004500   0.10931  -0.04117  0.9672
## 18    3.133  -0.022113   0.09481  -0.23323  0.8156
## 19    3.159  -0.022002   0.10657  -0.20646  0.8365
## 20    3.116  -0.024834   0.08826  -0.28136  0.7785
## 21    3.135   0.010332   0.08046   0.12840  0.8979
## 22    3.188  -0.002182   0.11112  -0.01964  0.9843
## 23    4.020  -0.013460   0.43673  -0.03082  0.9754
## 24    3.479  -0.044878   0.25249  -0.17774  0.8590
## 25    3.118  -0.005260   0.08015  -0.06563  0.9477
## 26    4.032  -0.005066   0.43793  -0.01157  0.9908
```

Cost and health insurance

every vs. never

```
ne_demo_belief_cost <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q14 +
       design = svy_never_every,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
```

```
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                      -26.918869   0.287361 -93.676   <2e-16
## ppagecat25-34                      0.043153   0.203678   0.212    0.832
## ppagecat35-44                      0.087126   0.190868   0.456    0.648
## ppagecat45-54                      0.184541   0.180518   1.022    0.307
## ppagecat55-64                      0.191401   0.170839   1.120    0.263
## ppagecat65-74                      0.213515   0.175366   1.218    0.224
## ppagecat75+                        0.235870   0.188101   1.254    0.210
## PPEDUCATHigh school                0.165529   0.155034   1.068    0.286
## PPEDUCATSome college               0.195378   0.160797   1.215    0.225
## PPEDUCATBachelor_s degree or higher   0.254270   0.160346   1.586    0.113
## income$10k to $25k                 0.043147   0.252872   0.171    0.865
## income$25k to $50k                 0.015673   0.241878   0.065    0.948
## income$50k to $75k                 0.057215   0.243267   0.235    0.814
## income$75k to $100k                0.024112   0.247778   0.097    0.923
## income$100k to $150k               0.033550   0.243329   0.138    0.890
## incomeover $150k                   0.006603   0.257373   0.026    0.980
## PPREG4Northeast                   -0.004500   0.109306  -0.041    0.967
## PPREG4South                       -0.022113   0.094810  -0.233    0.816
## PPREG4West                        -0.022002   0.106567  -0.206    0.836
## workemployed                      -0.024834   0.088264  -0.281    0.779
## Q20Somewhat effective              0.010332   0.080464   0.128    0.898
## Q20It varies from season to season   -0.002182   0.111120  -0.020    0.984
## Q20Not effective                  -0.013460   0.436733  -0.031    0.975
## Q20Don_t know                     -0.044878   0.252487  -0.178    0.859
## Q17Protect myself and others      -0.005260   0.080146  -0.066    0.948
## Q17Protect others                 -0.005066   0.437928  -0.012    0.991
##
## (Intercept)                       ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q17Protect myself and others
```

```
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.246607e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.038e-12 ***      1.333   -2.612
## 2                         ppagecat25-34 1.044e+00          1.226   -1.359
## 3                         ppagecat35-44 1.091e+00          1.210   -1.281
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.211e+00          1.186   -1.114
## 6                         ppagecat65-74 1.238e+00          1.192   -1.098
## 7                           ppagecat75+ 1.266e+00          1.207   -1.100
## 8                   PPEDUCATHigh school 1.180e+00          1.168   -1.109
## 9                  PPEDUCATSome college 1.216e+00          1.174   -1.086
## 10 PPEDUCATBachelor_s degree or higher 1.290e+00          1.174   -1.011
## 11                   income$10k to $25k 1.044e+00          1.288   -1.480
## 12                   income$25k to $50k 1.016e+00          1.274   -1.481
## 13                   income$50k to $75k 1.059e+00          1.275   -1.441
## 14                  income$75k to $100k 1.024e+00          1.281   -1.487
## 15                 income$100k to $150k 1.034e+00          1.275   -1.466
## 16                     incomeover $150k 1.007e+00          1.294   -1.529
## 17                      PPREG4Northeast 9.955e-01          1.116   -1.191
## 18                          PPREG4South 9.781e-01          1.099   -1.177
## 19                           PPREG4West 9.782e-01          1.112   -1.202
## 20                         workemployed 9.755e-01          1.092   -1.165
## 21                 Q20Somewhat effective 1.010e+00          1.084   -1.114
## 22  Q20It varies from season to season 9.978e-01          1.118   -1.193
## 23                      Q20Not effective 9.866e-01          1.548   -2.047
## 24                         Q20Don_t know 9.561e-01          1.287   -1.567
## 25         Q17Protect myself and others 9.948e-01          1.083   -1.129
## 26                     Q17Protect others 9.949e-01          1.549   -2.042
##    or_upper   estimate std.error statistic p.value
## 1     2.612 -26.918869   0.28736 -93.67604  0.0000
## 2     3.447   0.043153   0.20368   0.21187  0.8323
## 3     3.463   0.087126   0.19087   0.45647  0.6482
## 4     3.550   0.184541   0.18052   1.02229  0.3069
## 5     3.536   0.191401   0.17084   1.12036  0.2629
## 6     3.574   0.213515   0.17537   1.21754  0.2237
## 7     3.632   0.235870   0.18810   1.25395  0.2102
## 8     3.469   0.165529   0.15503   1.06769  0.2860
## 9     3.518   0.195378   0.16080   1.21506  0.2247
## 10    3.590   0.254270   0.16035   1.58575  0.1132
## 11    3.568   0.043147   0.25287   0.17063  0.8646
## 12    3.512   0.015673   0.24188   0.06480  0.9484
## 13    3.559   0.057215   0.24327   0.23519  0.8141
## 14    3.536   0.024112   0.24778   0.09731  0.9225
## 15    3.534   0.033550   0.24333   0.13788  0.8904
## 16    3.542   0.006603   0.25737   0.02565  0.9795
## 17    3.182  -0.004500   0.10931  -0.04117  0.9672
## 18    3.133  -0.022113   0.09481  -0.23323  0.8156
```

```
## 19    3.159  -0.022002   0.10657  -0.20646  0.8365
## 20    3.116  -0.024834   0.08826  -0.28136  0.7785
## 21    3.135   0.010332   0.08046   0.12840  0.8979
## 22    3.188  -0.002182   0.11112  -0.01964  0.9843
## 23    4.020  -0.013460   0.43673  -0.03082  0.9754
## 24    3.479  -0.044878   0.25249  -0.17774  0.8590
## 25    3.118  -0.005260   0.08015  -0.06563  0.9477
## 26    4.032  -0.005066   0.43793  -0.01157  0.9908
```

sometimes vs. never

```
ns_demo_belief_cost <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q14 +
       design = svy_never_some,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
##     ])
##
## Coefficients:
##                                      Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -26.918869   0.287361 -93.676   <2e-16
## ppagecat25-34                        0.043153   0.203678   0.212    0.832
## ppagecat35-44                        0.087126   0.190868   0.456    0.648
## ppagecat45-54                        0.184541   0.180518   1.022    0.307
## ppagecat55-64                        0.191401   0.170839   1.120    0.263
## ppagecat65-74                        0.213515   0.175366   1.218    0.224
## ppagecat75+                          0.235870   0.188101   1.254    0.210
## PPEDUCATHigh school                  0.165529   0.155034   1.068    0.286
## PPEDUCATSome college                 0.195378   0.160797   1.215    0.225
## PPEDUCATBachelor_s degree or higher  0.254270   0.160346   1.586    0.113
## income$10k to $25k                   0.043147   0.252872   0.171    0.865
## income$25k to $50k                   0.015673   0.241878   0.065    0.948
## income$50k to $75k                   0.057215   0.243267   0.235    0.814
## income$75k to $100k                  0.024112   0.247778   0.097    0.923
## income$100k to $150k                 0.033550   0.243329   0.138    0.890
## incomeover $150k                     0.006603   0.257373   0.026    0.980
## PPREG4Northeast                     -0.004500   0.109306  -0.041    0.967
## PPREG4South                         -0.022113   0.094810  -0.233    0.816
## PPREG4West                          -0.022002   0.106567  -0.206    0.836
## workemployed                        -0.024834   0.088264  -0.281    0.779
## Q20Somewhat effective                0.010332   0.080464   0.128    0.898
## Q20It varies from season to season  -0.002182   0.111120  -0.020    0.984
## Q20Not effective                    -0.013460   0.436733  -0.031    0.975
## Q20Don_t know                       -0.044878   0.252487  -0.178    0.859
```

```
## Q17Protect myself and others         -0.005260   0.080146  -0.066    0.948
## Q17Protect others                    -0.005066   0.437928  -0.012    0.991
##
## (Intercept)                         ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
## Q20Don_t know
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.246607e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.038e-12 ***      1.333   -2.612
## 2                         ppagecat25-34 1.044e+00          1.226   -1.359
## 3                         ppagecat35-44 1.091e+00          1.210   -1.281
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.211e+00          1.186   -1.114
## 6                         ppagecat65-74 1.238e+00          1.192   -1.098
## 7                           ppagecat75+ 1.266e+00          1.207   -1.100
## 8                   PPEDUCATHigh school 1.180e+00          1.168   -1.109
## 9                  PPEDUCATSome college 1.216e+00          1.174   -1.086
## 10 PPEDUCATBachelor_s degree or higher 1.290e+00          1.174   -1.011
## 11                   income$10k to $25k 1.044e+00          1.288   -1.480
## 12                   income$25k to $50k 1.016e+00          1.274   -1.481
## 13                   income$50k to $75k 1.059e+00          1.275   -1.441
## 14                  income$75k to $100k 1.024e+00          1.281   -1.487
## 15                 income$100k to $150k 1.034e+00          1.275   -1.466
## 16                     incomeover $150k 1.007e+00          1.294   -1.529
## 17                      PPREG4Northeast 9.955e-01          1.116   -1.191
```

```
## 18                          PPREG4South 9.781e-01          1.099   -1.177
## 19                           PPREG4West 9.782e-01          1.112   -1.202
## 20                         workemployed 9.755e-01          1.092   -1.165
## 21                 Q20Somewhat effective 1.010e+00          1.084   -1.114
## 22  Q20It varies from season to season 9.978e-01          1.118   -1.193
## 23                     Q20Not effective 9.866e-01          1.548   -2.047
## 24                        Q20Don_t know 9.561e-01          1.287   -1.567
## 25         Q17Protect myself and others 9.948e-01          1.083   -1.129
## 26                     Q17Protect others 9.949e-01          1.549   -2.042
##    or_upper   estimate std.error statistic p.value
## 1     2.612 -26.918869   0.28736 -93.67604  0.0000
## 2     3.447   0.043153   0.20368   0.21187  0.8323
## 3     3.463   0.087126   0.19087   0.45647  0.6482
## 4     3.550   0.184541   0.18052   1.02229  0.3069
## 5     3.536   0.191401   0.17084   1.12036  0.2629
## 6     3.574   0.213515   0.17537   1.21754  0.2237
## 7     3.632   0.235870   0.18810   1.25395  0.2102
## 8     3.469   0.165529   0.15503   1.06769  0.2860
## 9     3.518   0.195378   0.16080   1.21506  0.2247
## 10    3.590   0.254270   0.16035   1.58575  0.1132
## 11    3.568   0.043147   0.25287   0.17063  0.8646
## 12    3.512   0.015673   0.24188   0.06480  0.9484
## 13    3.559   0.057215   0.24327   0.23519  0.8141
## 14    3.536   0.024112   0.24778   0.09731  0.9225
## 15    3.534   0.033550   0.24333   0.13788  0.8904
## 16    3.542   0.006603   0.25737   0.02565  0.9795
## 17    3.182  -0.004500   0.10931  -0.04117  0.9672
## 18    3.133  -0.022113   0.09481  -0.23323  0.8156
## 19    3.159  -0.022002   0.10657  -0.20646  0.8365
## 20    3.116  -0.024834   0.08826  -0.28136  0.7785
## 21    3.135   0.010332   0.08046   0.12840  0.8979
## 22    3.188  -0.002182   0.11112  -0.01964  0.9843
## 23    4.020  -0.013460   0.43673  -0.03082  0.9754
## 24    3.479  -0.044878   0.25249  -0.17774  0.8590
## 25    3.118  -0.005260   0.08015  -0.06563  0.9477
## 26    4.032  -0.005066   0.43793  -0.01157  0.9908
```

sometimes+every vs. never

```
nse_demo_belief_cost <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q14
       design = svy_never_someevery,
       family = quasibinomial(link = "logit"))
```

```
## Warning: glm.fit: algorithm did not converge
```

```
print_svy_mod(ne_demo_belief_social)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q17, design = svy_never_every, family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_every[!is.na(never_every$weight),
```

```
##     ])
##
## Coefficients:
##                                     Estimate Std. Error t value Pr(>|t|)
## (Intercept)                       -26.918869   0.287361 -93.676   <2e-16
## ppagecat25-34                       0.043153   0.203678   0.212    0.832
## ppagecat35-44                       0.087126   0.190868   0.456    0.648
## ppagecat45-54                       0.184541   0.180518   1.022    0.307
## ppagecat55-64                       0.191401   0.170839   1.120    0.263
## ppagecat65-74                       0.213515   0.175366   1.218    0.224
## ppagecat75+                         0.235870   0.188101   1.254    0.210
## PPEDUCATHigh school                 0.165529   0.155034   1.068    0.286
## PPEDUCATSome college                0.195378   0.160797   1.215    0.225
## PPEDUCATBachelor_s degree or higher 0.254270   0.160346   1.586    0.113
## income$10k to $25k                  0.043147   0.252872   0.171    0.865
## income$25k to $50k                  0.015673   0.241878   0.065    0.948
## income$50k to $75k                  0.057215   0.243267   0.235    0.814
## income$75k to $100k                 0.024112   0.247778   0.097    0.923
## income$100k to $150k                0.033550   0.243329   0.138    0.890
## incomeover $150k                    0.006603   0.257373   0.026    0.980
## PPREG4Northeast                    -0.004500   0.109306  -0.041    0.967
## PPREG4South                        -0.022113   0.094810  -0.233    0.816
## PPREG4West                         -0.022002   0.106567  -0.206    0.836
## workemployed                       -0.024834   0.088264  -0.281    0.779
## Q20Somewhat effective               0.010332   0.080464   0.128    0.898
## Q20It varies from season to season -0.002182   0.111120  -0.020    0.984
## Q20Not effective                   -0.013460   0.436733  -0.031    0.975
## Q20Don_t know                      -0.044878   0.252487  -0.178    0.859
## Q17Protect myself and others       -0.005260   0.080146  -0.066    0.948
## Q17Protect others                  -0.005066   0.437928  -0.012    0.991
##
## (Intercept)                       ***
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West
## workemployed
## Q20Somewhat effective
## Q20It varies from season to season
## Q20Not effective
```

```
## Q20Don_t know
## Q17Protect myself and others
## Q17Protect others
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 7.246607e-15)
##
## Number of Fisher Scoring iterations: 25
##
##                                    term        or sig or_std_err or_lower
## 1                           (Intercept) 2.038e-12 ***      1.333   -2.612
## 2                         ppagecat25-34 1.044e+00          1.226   -1.359
## 3                         ppagecat35-44 1.091e+00          1.210   -1.281
## 4                         ppagecat45-54 1.203e+00          1.198   -1.145
## 5                         ppagecat55-64 1.211e+00          1.186   -1.114
## 6                         ppagecat65-74 1.238e+00          1.192   -1.098
## 7                           ppagecat75+ 1.266e+00          1.207   -1.100
## 8                   PPEDUCATHigh school 1.180e+00          1.168   -1.109
## 9                  PPEDUCATSome college 1.216e+00          1.174   -1.086
## 10 PPEDUCATBachelor_s degree or higher 1.290e+00          1.174   -1.011
## 11                   income$10k to $25k 1.044e+00          1.288   -1.480
## 12                   income$25k to $50k 1.016e+00          1.274   -1.481
## 13                   income$50k to $75k 1.059e+00          1.275   -1.441
## 14                  income$75k to $100k 1.024e+00          1.281   -1.487
## 15                 income$100k to $150k 1.034e+00          1.275   -1.466
## 16                     incomeover $150k 1.007e+00          1.294   -1.529
## 17                      PPREG4Northeast 9.955e-01          1.116   -1.191
## 18                          PPREG4South 9.781e-01          1.099   -1.177
## 19                           PPREG4West 9.782e-01          1.112   -1.202
## 20                         workemployed 9.755e-01          1.092   -1.165
## 21                Q20Somewhat effective 1.010e+00          1.084   -1.114
## 22  Q20It varies from season to season 9.978e-01          1.118   -1.193
## 23                     Q20Not effective 9.866e-01          1.548   -2.047
## 24                        Q20Don_t know 9.561e-01          1.287   -1.567
## 25        Q17Protect myself and others 9.948e-01          1.083   -1.129
## 26                     Q17Protect others 9.949e-01          1.549   -2.042
##    or_upper   estimate std.error statistic p.value
## 1     2.612 -26.918869   0.28736 -93.67604  0.0000
## 2     3.447   0.043153   0.20368   0.21187  0.8323
## 3     3.463   0.087126   0.19087   0.45647  0.6482
## 4     3.550   0.184541   0.18052   1.02229  0.3069
## 5     3.536   0.191401   0.17084   1.12036  0.2629
## 6     3.574   0.213515   0.17537   1.21754  0.2237
## 7     3.632   0.235870   0.18810   1.25395  0.2102
## 8     3.469   0.165529   0.15503   1.06769  0.2860
## 9     3.518   0.195378   0.16080   1.21506  0.2247
## 10    3.590   0.254270   0.16035   1.58575  0.1132
## 11    3.568   0.043147   0.25287   0.17063  0.8646
## 12    3.512   0.015673   0.24188   0.06480  0.9484
## 13    3.559   0.057215   0.24327   0.23519  0.8141
## 14    3.536   0.024112   0.24778   0.09731  0.9225
## 15    3.534   0.033550   0.24333   0.13788  0.8904
## 16    3.542   0.006603   0.25737   0.02565  0.9795
```

```
## 17    3.182  -0.004500   0.10931  -0.04117  0.9672
## 18    3.133  -0.022113   0.09481  -0.23323  0.8156
## 19    3.159  -0.022002   0.10657  -0.20646  0.8365
## 20    3.116  -0.024834   0.08826  -0.28136  0.7785
## 21    3.135   0.010332   0.08046   0.12840  0.8979
## 22    3.188  -0.002182   0.11112  -0.01964  0.9843
## 23    4.020  -0.013460   0.43673  -0.03082  0.9754
## 24    3.479  -0.044878   0.25249  -0.17774  0.8590
## 25    3.118  -0.005260   0.08015  -0.06563  0.9477
## 26    4.032  -0.005066   0.43793  -0.01157  0.9908
```

AIC/BIC

```
AIC(ne_demo, ne_demo_belief, ne_demo_belief_social, ne_demo_belief_cost)
```

```
##             eff.p          AIC     deltabar
## [1,] 2.271370e+01 2.227893e+03 1.195458e+00
## [2,] 2.696941e+01 1.712290e+03 1.172583e+00
## [3,] 2.095767e-10 5.283537e-09 8.383069e-12
## [4,] 2.337024e-10 5.347225e-09 8.346514e-12
```

```
AIC(ns_demo, ns_demo_belief, ns_demo_belief_social, ns_demo_belief_cost)
```

```
##             eff.p          AIC     deltabar
## [1,] 2.181199e+01 1.555697e+03 1.147999e+00
## [2,] 2.621122e+01 1.438047e+03 1.139618e+00
## [3,] 2.281033e-10 2.823317e-09 8.448270e-12
## [4,] 2.282095e-10 2.821180e-09 8.452205e-12
```

```
AIC(nse_demo, nse_demo_belief, nse_demo_belief_social, nse_demo_belief_cost)
```

```
##             eff.p          AIC     deltabar
## [1,] 2.288354e+01 2.793109e+03 1.204397e+00
## [2,] 2.777803e+01 2.336361e+03 1.207741e+00
## [3,] 2.465347e-10 7.699311e-09 8.501197e-12
## [4,] 2.379679e-10 7.754839e-09 8.498852e-12
```

```
BIC(ne_demo, ne_demo_belief, ne_demo_belief_cost, maximal = ne_demo_belief_cost)
```

```
##       p       BIC         neff
## [1,] 20 -80.43742 2.073680e+14
## [2,] 24  51.23692 2.091341e+14
## [3,] 29 197.36595          NaN
```

```
BIC(ns_demo, ns_demo_belief, ns_demo_belief_cost, maximal = ns_demo_belief_cost)
```

```
##       p       BIC         neff
## [1,] 20 -61.08918 1.443675e+14
## [2,] 24  69.06733 1.443412e+14
## [3,] 28 169.12713          NaN
```

```
BIC(nse_demo, nse_demo_belief, nse_demo_belief_cost, maximal = nse_demo_belief_cost)
```

```
##       p       BIC         neff
## [1,] 20 -75.55857 2.487591e+14
## [2,] 24  56.73697 2.492236e+14
## [3,] 29 208.44206          NaN
```

Drop the cost variables.

Reasons to not get a vaccine

Flip the response and Q18 variables

```
library(forcats)
df <- readRDS('./data/subset_recode.RDS')
never_some_flipped <- df[df$Q13 %in% c('Yes, some years', 'No, never'), ]
never_some_flipped$Q13 <- droplevels(never_some$Q13)
never_some_flipped$Q13 <- fct_relevel(never_some$Q13, 'Yes, some years', after = 0L)
table(never_some_flipped$Q13, useNA = 'always')
```

```
##
## Yes, some years       No, never            <NA>
##             423             819               0
```

```
levels(never_some_flipped$Q13)
```

```
## [1] "Yes, some years" "No, never"
```

```
testthat::expect_equal(levels(never_some_flipped$Q13)[1], "Yes, some years")
```

```
table(never_some_flipped$Q13, never_some_flipped$Q18_1, useNA = 'always')
```

```
##
##                    Yes  No <NA>
##   Yes, some years   61 362    0
##   No, never         49 770    0
##   <NA>               0   0    0
```

```
make_no_ref <- function(dat) {
  dat <- fct_relevel(dat, "No", after = 0L)
  testthat::expect_equal(levels(dat)[1], "No")
  return(dat)
}
```

```
never_some_flipped$Q18_1 <- sapply(never_some_flipped$Q18_1, make_no_ref)
never_some_flipped$Q18_2 <- sapply(never_some_flipped$Q18_2, make_no_ref)
never_some_flipped$Q18_3 <- sapply(never_some_flipped$Q18_3, make_no_ref)
never_some_flipped$Q18_4 <- sapply(never_some_flipped$Q18_4, make_no_ref)
never_some_flipped$Q18_5 <- sapply(never_some_flipped$Q18_5, make_no_ref)
never_some_flipped$Q18_6 <- sapply(never_some_flipped$Q18_6, make_no_ref)
never_some_flipped$Q18_7 <- sapply(never_some_flipped$Q18_7, make_no_ref)
never_some_flipped$Q18_8 <- sapply(never_some_flipped$Q18_8, make_no_ref)
never_some_flipped$Q18_9 <- sapply(never_some_flipped$Q18_9, make_no_ref)
never_some_flipped$Q18_10 <- sapply(never_some_flipped$Q18_10, make_no_ref)

svy_never_some_flipped <- svydesign(ids = ~1, weights = ~weight, data = never_some_flipped[!is.na(never
```

```
lapply(never_some_flipped[, 37:46], table)
```

```
## $Q18_1
##
##   No  Yes
## 1132  110
```

```
##
## $Q18_2
##
##  No Yes
## 903 339
##
## $Q18_3
##
##  No Yes
## 964 278
##
## $Q18_4
##
##   No  Yes
## 1199   43
##
## $Q18_5
##
##  No Yes
## 958 284
##
## $Q18_6
##
##   No  Yes
## 1184   58
##
## $Q18_7
##
##  No Yes
## 976 266
##
## $Q18_8
##
##  No Yes
## 878 364
##
## $Q18_9
##
##   No  Yes
## 1216   26
##
## $Q18_10
##
##   No  Yes
## 1064  178
```

```
table(df$Q18_1, df$Q13)
```

```
##
##       Yes, every year Yes, some years No, never
##   Yes               0              61        49
##   No                0             362       770
```

The reference response is "Yes, Sometimes."

The model is modeling NOT getting a vaccine.

never vs. sometimes

```
ns_demo_belief_barriers <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + (
       design = svy_never_some_flipped,
       family = quasibinomial(link = "logit"))
print_svy_mod(ns_demo_belief_barriers)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q18_1 + Q18_2 + Q18_3 + Q18_4 + Q18_5 + Q18_6 +
##     Q18_7 + Q18_8 + Q18_9 + Q18_10, design = svy_never_some_flipped,
##     family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_some_flipped[!is.na(never_some_flipped$weight),
##     ])
##
## Coefficients:
##                                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)                        -0.15571    0.49617  -0.314 0.753709
## ppagecat25-34                      -0.05572    0.28031  -0.199 0.842454
## ppagecat35-44                       0.20061    0.26920   0.745 0.456284
## ppagecat45-54                       0.11955    0.25431   0.470 0.638372
## ppagecat55-64                       0.38560    0.26598   1.450 0.147386
## ppagecat65-74                      -0.04164    0.31259  -0.133 0.894048
## ppagecat75+                         0.40487    0.51011   0.794 0.427535
## PPEDUCATHigh school                 0.38895    0.29808   1.305 0.192186
## PPEDUCATSome college               -0.62718    0.29713  -2.111 0.034997
## PPEDUCATBachelor_s degree or higher -0.54476    0.30054  -1.813 0.070140
## income$10k to $25k                  0.20248    0.44083   0.459 0.646089
## income$25k to $50k                 -0.19751    0.38378  -0.515 0.606904
## income$50k to $75k                 -0.18459    0.39508  -0.467 0.640413
## income$75k to $100k                -0.38757    0.39873  -0.972 0.331238
## income$100k to $150k               -0.37769    0.39423  -0.958 0.338233
## incomeover $150k                   -0.42697    0.43006  -0.993 0.320999
## PPREG4Northeast                     0.08237    0.22547   0.365 0.714925
## PPREG4South                         0.27317    0.20194   1.353 0.176404
## PPREG4West                         -0.48089    0.21630  -2.223 0.026385
## workemployed                        0.26621    0.18238   1.460 0.144654
## Q20Somewhat effective               0.67247    0.28389   2.369 0.018003
## Q20It varies from season to season  1.43950    0.31246   4.607 4.52e-06
## Q20Not effective                    2.33496    0.41198   5.668 1.81e-08
## Q20Don_t know                       2.34607    0.34525   6.795 1.70e-11
## Q18_1Yes                           -0.95155    0.25579  -3.720 0.000208
## Q18_2Yes                           -0.86311    0.17560  -4.915 1.01e-06
## Q18_3Yes                            0.71456    0.18633   3.835 0.000132
## Q18_4Yes                            0.41757    0.49844   0.838 0.402333
## Q18_5Yes                            0.74214    0.20046   3.702 0.000223
## Q18_6Yes                           -0.53782    0.36478  -1.474 0.140636
## Q18_7Yes                            0.35296    0.18891   1.868 0.061949
## Q18_8Yes                           -0.63482    0.15856  -4.004 6.62e-05
## Q18_9Yes                           -0.45353    0.42010  -1.080 0.280546
## Q18_10Yes                           0.14691    0.23884   0.615 0.538611
```

```
##
## (Intercept)
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college                *
## PPEDUCATBachelor_s degree or higher .
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West                          *
## workemployed
## Q20Somewhat effective               *
## Q20It varies from season to season  ***
## Q20Not effective                    ***
## Q20Don_t know                       ***
## Q18_1Yes                            ***
## Q18_2Yes                            ***
## Q18_3Yes                            ***
## Q18_4Yes
## Q18_5Yes                            ***
## Q18_6Yes
## Q18_7Yes                            .
## Q18_8Yes                            ***
## Q18_9Yes
## Q18_10Yes
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 1.009234)
##
## Number of Fisher Scoring iterations: 4
##
##                                  term      or sig or_std_err or_lower
## 1                          (Intercept)  0.8558          1.642  -2.3633
## 2                        ppagecat25-34  0.9458          1.324  -1.6483
## 3                        ppagecat35-44  1.2222          1.309  -1.3433
## 4                        ppagecat45-54  1.1270          1.290  -1.4006
## 5                        ppagecat55-64  1.4705          1.305  -1.0867
## 6                        ppagecat65-74  0.9592          1.367  -1.7200
## 7                          ppagecat75+  1.4991          1.665  -1.7652
## 8                 PPEDUCATHigh school  1.4754          1.347  -1.1652
## 9                PPEDUCATSome college  0.5341   *      1.346  -2.1041
## 10 PPEDUCATBachelor_s degree or higher  0.5800   .      1.351  -2.0672
## 11                  income$10k to $25k  1.2244          1.554  -1.8214
```

```
## 12                   income$25k to $50k  0.8208         1.468  -2.0562
## 13                   income$50k to $75k  0.8314         1.484  -2.0782
## 14                  income$75k to $100k  0.6787         1.490  -2.2416
## 15                 income$100k to $150k  0.6854         1.483  -2.2217
## 16                     incomeover $150k  0.6525         1.537  -2.3607
## 17                      PPREG4Northeast  1.0859         1.253  -1.3699
## 18                          PPREG4South  1.3141         1.224  -1.0845
## 19                          PPREG4West  0.6182   *     1.241  -1.8151
## 20                        workemployed  1.3050         1.200  -1.0471
## 21                Q20Somewhat effective  1.9591   *     1.328  -0.6444
## 22  Q20It varies from season to season  4.2186 ***     1.367   1.5397
## 23                     Q20Not effective 10.3290 ***     1.510   7.3698
## 24                        Q20Don_t know 10.4445 ***     1.412   7.6763
## 25                             Q18_1Yes  0.3861 ***     1.291  -2.1452
## 26                             Q18_2Yes  0.4218 ***     1.192  -1.9144
## 27                             Q18_3Yes  2.0433 ***     1.205  -0.3182
## 28                             Q18_4Yes  1.5183         1.646  -1.7082
## 29                             Q18_5Yes  2.1004 ***     1.222  -0.2946
## 30                             Q18_6Yes  0.5840         1.440  -2.2388
## 31                             Q18_7Yes  1.4233   .     1.208  -0.9443
## 32                             Q18_8Yes  0.5300 ***     1.172  -1.7667
## 33                             Q18_9Yes  0.6354         1.522  -2.3480
## 34                            Q18_10Yes  1.1582         1.270  -1.3305
##    or_upper estimate std.error statistic   p.value
## 1     4.075 -0.15571    0.4962   -0.3138 7.537e-01
## 2     3.540 -0.05572    0.2803   -0.1988 8.425e-01
## 3     3.788  0.20061    0.2692    0.7452 4.563e-01
## 4     3.655  0.11955    0.2543    0.4701 6.384e-01
## 5     4.028  0.38560    0.2660    1.4498 1.474e-01
## 6     3.638 -0.04164    0.3126   -0.1332 8.940e-01
## 7     4.763  0.40487    0.5101    0.7937 4.275e-01
## 8     4.116  0.38895    0.2981    1.3049 1.922e-01
## 9     3.172 -0.62718    0.2971   -2.1108 3.500e-02
## 10    3.227 -0.54476    0.3005   -1.8126 7.014e-02
## 11    4.270  0.20248    0.4408    0.4593 6.461e-01
## 12    3.698 -0.19751    0.3838   -0.5146 6.069e-01
## 13    3.741 -0.18459    0.3951   -0.4672 6.404e-01
## 14    3.599 -0.38757    0.3987   -0.9720 3.312e-01
## 15    3.593 -0.37769    0.3942   -0.9580 3.382e-01
## 16    3.666 -0.42697    0.4301   -0.9928 3.210e-01
## 17    3.542  0.08237    0.2255    0.3653 7.149e-01
## 18    3.713  0.27317    0.2019    1.3527 1.764e-01
## 19    3.052 -0.48089    0.2163   -2.2232 2.639e-02
## 20    3.657  0.26621    0.1824    1.4596 1.447e-01
## 21    4.562  0.67247    0.2839    2.3688 1.800e-02
## 22    6.897  1.43950    0.3125    4.6069 4.521e-06
## 23   13.288  2.33496    0.4120    5.6676 1.810e-08
## 24   13.213  2.34607    0.3453    6.7952 1.696e-11
## 25    2.917 -0.95155    0.2558   -3.7200 2.084e-04
## 26    2.758 -0.86311    0.1756   -4.9152 1.009e-06
## 27    4.405  0.71456    0.1863    3.8348 1.322e-04
## 28    4.745  0.41757    0.4984    0.8378 4.023e-01
## 29    4.495  0.74214    0.2005    3.7021 2.234e-04
## 30    3.407 -0.53782    0.3648   -1.4744 1.406e-01
```

```
## 31    3.791  0.35296    0.1889    1.8684 6.195e-02
## 32    2.827 -0.63482    0.1586   -4.0036 6.620e-05
## 33    3.619 -0.45353    0.4201   -1.0796 2.805e-01
## 34    3.647  0.14691    0.2388    0.6151 5.386e-01
```

```r
ns_demo_belief_barriers <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + (
       design = svy_never_some_flipped,
       family = quasibinomial(link = "logit"))
print_svy_mod(ns_demo_belief_barriers)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q18_1 + Q18_2 + Q18_3 + Q18_4 + Q18_5 + Q18_6 +
##     Q18_7 + Q18_8 + Q18_9 + Q18_10 + PPEDUCAT * Q20, design = svy_never_some_flipped,
##     family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_some_flipped[!is.na(never_some_flipped$weight),
##     ])
##
## Coefficients:
##                                                                  Estimate
## (Intercept)                                                      -1.24535
## ppagecat25-34                                                    -0.04565
## ppagecat35-44                                                     0.14054
## ppagecat45-54                                                     0.12964
## ppagecat55-64                                                     0.39507
## ppagecat65-74                                                    -0.01901
## ppagecat75+                                                       0.41384
## PPEDUCATHigh school                                               2.08719
## PPEDUCATSome college                                              0.97342
## PPEDUCATBachelor_s degree or higher                               0.35122
## income$10k to $25k                                                0.08492
## income$25k to $50k                                               -0.33254
## income$50k to $75k                                               -0.28240
## income$75k to $100k                                              -0.48585
## income$100k to $150k                                             -0.48552
## incomeover $150k                                                 -0.58160
## PPREG4Northeast                                                   0.09268
## PPREG4South                                                       0.27413
## PPREG4West                                                       -0.46402
## workemployed                                                      0.26623
## Q20Somewhat effective                                             1.94282
## Q20It varies from season to season                                3.25230
## Q20Not effective                                                  3.72719
## Q20Don_t know                                                     3.96031
## Q18_1Yes                                                         -0.97314
## Q18_2Yes                                                         -0.82595
## Q18_3Yes                                                          0.71408
## Q18_4Yes                                                          0.31629
```

```
## Q18_5Yes                                                                 0.73819
## Q18_6Yes                                                                -0.56564
## Q18_7Yes                                                                 0.35928
## Q18_8Yes                                                                -0.64133
## Q18_9Yes                                                                -0.63690
## Q18_10Yes                                                                0.13628
## PPEDUCATHigh school:Q20Somewhat effective                               -1.85645
## PPEDUCATSome college:Q20Somewhat effective                              -1.63406
## PPEDUCATBachelor_s degree or higher:Q20Somewhat effective               -0.93506
## PPEDUCATHigh school:Q20It varies from season to season                  -2.49493
## PPEDUCATSome college:Q20It varies from season to season                 -2.11361
## PPEDUCATBachelor_s degree or higher:Q20It varies from season to season -1.57214
## PPEDUCATHigh school:Q20Not effective                                    -1.85675
## PPEDUCATSome college:Q20Not effective                                   -1.82470
## PPEDUCATBachelor_s degree or higher:Q20Not effective                    -1.23807
## PPEDUCATHigh school:Q20Don_t know                                       -1.94038
## PPEDUCATSome college:Q20Don_t know                                      -2.40289
## PPEDUCATBachelor_s degree or higher:Q20Don_t know                       -0.68133
##                                                                         Std. Error
## (Intercept)                                                                0.78226
## ppagecat25-34                                                              0.28002
## ppagecat35-44                                                              0.26722
## ppagecat45-54                                                              0.25737
## ppagecat55-64                                                              0.26862
## ppagecat65-74                                                              0.31441
## ppagecat75+                                                                0.52460
## PPEDUCATHigh school                                                        0.84701
## PPEDUCATSome college                                                       0.90210
## PPEDUCATBachelor_s degree or higher                                        0.93068
## income$10k to $25k                                                         0.47523
## income$25k to $50k                                                         0.41631
## income$50k to $75k                                                         0.42902
## income$75k to $100k                                                        0.43008
## income$100k to $150k                                                       0.42944
## incomeover $150k                                                           0.46243
## PPREG4Northeast                                                            0.22304
## PPREG4South                                                                0.19979
## PPREG4West                                                                 0.21539
## workemployed                                                               0.18469
## Q20Somewhat effective                                                      0.80650
## Q20It varies from season to season                                         1.19109
## Q20Not effective                                                           1.37768
## Q20Don_t know                                                              0.99239
## Q18_1Yes                                                                   0.25771
## Q18_2Yes                                                                   0.17405
## Q18_3Yes                                                                   0.18796
## Q18_4Yes                                                                   0.48925
## Q18_5Yes                                                                   0.20229
## Q18_6Yes                                                                   0.36759
## Q18_7Yes                                                                   0.19008
## Q18_8Yes                                                                   0.16341
## Q18_9Yes                                                                   0.45224
## Q18_10Yes                                                                  0.23909
## PPEDUCATHigh school:Q20Somewhat effective                                  0.94091
```

```
## PPEDUCATSome college:Q20Somewhat effective                                  0.98433
## PPEDUCATBachelor_s degree or higher:Q20Somewhat effective                   0.99411
## PPEDUCATHigh school:Q20It varies from season to season                      1.30637
## PPEDUCATSome college:Q20It varies from season to season                     1.33730
## PPEDUCATBachelor_s degree or higher:Q20It varies from season to season      1.33773
## PPEDUCATHigh school:Q20Not effective                                        1.54536
## PPEDUCATSome college:Q20Not effective                                       1.54471
## PPEDUCATBachelor_s degree or higher:Q20Not effective                        1.56037
## PPEDUCATHigh school:Q20Don_t know                                           1.21627
## PPEDUCATSome college:Q20Don_t know                                          1.16222
## PPEDUCATBachelor_s degree or higher:Q20Don_t know                           1.33625
##                                                                          t value
## (Intercept)                                                               -1.592
## ppagecat25-34                                                             -0.163
## ppagecat35-44                                                              0.526
## ppagecat45-54                                                              0.504
## ppagecat55-64                                                              1.471
## ppagecat65-74                                                             -0.060
## ppagecat75+                                                                0.789
## PPEDUCATHigh school                                                        2.464
## PPEDUCATSome college                                                       1.079
## PPEDUCATBachelor_s degree or higher                                        0.377
## income$10k to $25k                                                         0.179
## income$25k to $50k                                                        -0.799
## income$50k to $75k                                                        -0.658
## income$75k to $100k                                                       -1.130
## income$100k to $150k                                                      -1.131
## incomeover $150k                                                          -1.258
## PPREG4Northeast                                                            0.416
## PPREG4South                                                                1.372
## PPREG4West                                                                -2.154
## workemployed                                                               1.442
## Q20Somewhat effective                                                      2.409
## Q20It varies from season to season                                         2.731
## Q20Not effective                                                           2.705
## Q20Don_t know                                                              3.991
## Q18_1Yes                                                                  -3.776
## Q18_2Yes                                                                  -4.745
## Q18_3Yes                                                                   3.799
## Q18_4Yes                                                                   0.646
## Q18_5Yes                                                                   3.649
## Q18_6Yes                                                                  -1.539
## Q18_7Yes                                                                   1.890
## Q18_8Yes                                                                  -3.925
## Q18_9Yes                                                                  -1.408
## Q18_10Yes                                                                  0.570
## PPEDUCATHigh school:Q20Somewhat effective                                 -1.973
## PPEDUCATSome college:Q20Somewhat effective                                -1.660
## PPEDUCATBachelor_s degree or higher:Q20Somewhat effective                 -0.941
## PPEDUCATHigh school:Q20It varies from season to season                    -1.910
## PPEDUCATSome college:Q20It varies from season to season                   -1.581
## PPEDUCATBachelor_s degree or higher:Q20It varies from season to season    -1.175
## PPEDUCATHigh school:Q20Not effective                                      -1.201
## PPEDUCATSome college:Q20Not effective                                     -1.181
```

```
## PPEDUCATBachelor_s degree or higher:Q20Not effective                    -0.793
## PPEDUCATHigh school:Q20Don_t know                                       -1.595
## PPEDUCATSome college:Q20Don_t know                                      -2.068
## PPEDUCATBachelor_s degree or higher:Q20Don_t know                       -0.510
##                                                                       Pr(>|t|)
## (Intercept)                                                           0.111652
## ppagecat25-34                                                         0.870518
## ppagecat35-44                                                         0.599023
## ppagecat45-54                                                         0.614552
## ppagecat55-64                                                         0.141631
## ppagecat65-74                                                         0.951795
## ppagecat75+                                                           0.430353
## PPEDUCATHigh school                                                   0.013873
## PPEDUCATSome college                                                  0.280781
## PPEDUCATBachelor_s degree or higher                                   0.705955
## income$10k to $25k                                                    0.858212
## income$25k to $50k                                                    0.424584
## income$50k to $75k                                                    0.510511
## income$75k to $100k                                                   0.258841
## income$100k to $150k                                                  0.258454
## incomeover $150k                                                      0.208742
## PPREG4Northeast                                                       0.677816
## PPREG4South                                                           0.170296
## PPREG4West                                                            0.031416
## workemployed                                                          0.149689
## Q20Somewhat effective                                                 0.016149
## Q20It varies from season to season                                    0.006416
## Q20Not effective                                                      0.006919
## Q20Don_t know                                                         6.99e-05
## Q18_1Yes                                                              0.000167
## Q18_2Yes                                                              2.33e-06
## Q18_3Yes                                                              0.000153
## Q18_4Yes                                                              0.518093
## Q18_5Yes                                                              0.000274
## Q18_6Yes                                                              0.124118
## Q18_7Yes                                                              0.058984
## Q18_8Yes                                                              9.18e-05
## Q18_9Yes                                                              0.159296
## Q18_10Yes                                                             0.568787
## PPEDUCATHigh school:Q20Somewhat effective                             0.048722
## PPEDUCATSome college:Q20Somewhat effective                            0.097164
## PPEDUCATBachelor_s degree or higher:Q20Somewhat effective             0.347099
## PPEDUCATHigh school:Q20It varies from season to season                0.056396
## PPEDUCATSome college:Q20It varies from season to season               0.114256
## PPEDUCATBachelor_s degree or higher:Q20It varies from season to season 0.240139
## PPEDUCATHigh school:Q20Not effective                                  0.229796
## PPEDUCATSome college:Q20Not effective                                 0.237736
## PPEDUCATBachelor_s degree or higher:Q20Not effective                  0.427675
## PPEDUCATHigh school:Q20Don_t know                                     0.110896
## PPEDUCATSome college:Q20Don_t know                                    0.038901
## PPEDUCATBachelor_s degree or higher:Q20Don_t know                     0.610228
##
## (Intercept)
## ppagecat25-34
```

```
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school                                                  *
## PPEDUCATSome college
## PPEDUCATBachelor_s degree or higher
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West                                                           *
## workemployed
## Q20Somewhat effective                                                *
## Q20It varies from season to season                                   **
## Q20Not effective                                                     **
## Q20Don_t know                                                        ***
## Q18_1Yes                                                             ***
## Q18_2Yes                                                             ***
## Q18_3Yes                                                             ***
## Q18_4Yes
## Q18_5Yes                                                             ***
## Q18_6Yes
## Q18_7Yes                                                             .
## Q18_8Yes                                                             ***
## Q18_9Yes
## Q18_10Yes
## PPEDUCATHigh school:Q20Somewhat effective                            *
## PPEDUCATSome college:Q20Somewhat effective                           .
## PPEDUCATBachelor_s degree or higher:Q20Somewhat effective
## PPEDUCATHigh school:Q20It varies from season to season               .
## PPEDUCATSome college:Q20It varies from season to season
## PPEDUCATBachelor_s degree or higher:Q20It varies from season to season
## PPEDUCATHigh school:Q20Not effective
## PPEDUCATSome college:Q20Not effective
## PPEDUCATBachelor_s degree or higher:Q20Not effective
## PPEDUCATHigh school:Q20Don_t know
## PPEDUCATSome college:Q20Don_t know                                   *
## PPEDUCATBachelor_s degree or higher:Q20Don_t know
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 1.019612)
##
## Number of Fisher Scoring iterations: 5
##
##                                                                    term
## 1                                                           (Intercept)
## 2                                                         ppagecat25-34
```

```
## 3                                                                ppagecat35-44
## 4                                                                ppagecat45-54
## 5                                                                ppagecat55-64
## 6                                                                ppagecat65-74
## 7                                                                  ppagecat75+
## 8                                                         PPEDUCATHigh school
## 9                                                       PPEDUCATSome college
## 10                                          PPEDUCATBachelor_s degree or higher
## 11                                                        income$10k to $25k
## 12                                                        income$25k to $50k
## 13                                                        income$50k to $75k
## 14                                                       income$75k to $100k
## 15                                                      income$100k to $150k
## 16                                                          incomeover $150k
## 17                                                           PPREG4Northeast
## 18                                                               PPREG4South
## 19                                                                PPREG4West
## 20                                                              workemployed
## 21                                                    Q20Somewhat effective
## 22                                     Q20It varies from season to season
## 23                                                         Q20Not effective
## 24                                                            Q20Don_t know
## 25                                                                 Q18_1Yes
## 26                                                                 Q18_2Yes
## 27                                                                 Q18_3Yes
## 28                                                                 Q18_4Yes
## 29                                                                 Q18_5Yes
## 30                                                                 Q18_6Yes
## 31                                                                 Q18_7Yes
## 32                                                                 Q18_8Yes
## 33                                                                 Q18_9Yes
## 34                                                                Q18_10Yes
## 35                                  PPEDUCATHigh school:Q20Somewhat effective
## 36                                 PPEDUCATSome college:Q20Somewhat effective
## 37                  PPEDUCATBachelor_s degree or higher:Q20Somewhat effective
## 38                     PPEDUCATHigh school:Q20It varies from season to season
## 39                   PPEDUCATSome college:Q20It varies from season to season
## 40 PPEDUCATBachelor_s degree or higher:Q20It varies from season to season
## 41                                        PPEDUCATHigh school:Q20Not effective
## 42                                      PPEDUCATSome college:Q20Not effective
## 43                         PPEDUCATBachelor_s degree or higher:Q20Not effective
## 44                                         PPEDUCATHigh school:Q20Don_t know
## 45                                       PPEDUCATSome college:Q20Don_t know
## 46                           PPEDUCATBachelor_s degree or higher:Q20Don_t know
##          or sig or_std_err or_lower or_upper estimate std.error statistic
## 1   0.28784          2.186  -3.9975    4.573 -1.24535    0.7823  -1.59199
## 2   0.95537          1.323  -1.6380    3.549 -0.04565    0.2800  -0.16304
## 3   1.15090          1.306  -1.4095    3.711  0.14054    0.2672   0.52595
## 4   1.13842          1.294  -1.3969    3.674  0.12964    0.2574   0.50372
## 5   1.48449          1.308  -1.0795    4.048  0.39507    0.2686   1.47072
## 6   0.98117          1.369  -1.7030    3.665 -0.01901    0.3144  -0.06047
## 7   1.51261          1.690  -1.7994    4.825  0.41384    0.5246   0.78886
## 8   8.06221   *      2.333   3.4902   12.634  2.08719    0.8470   2.46419
## 9   2.64698          2.465  -2.1840    7.478  0.97342    0.9021   1.07906
```

```
## 10  1.42080         2.536  -3.5502    6.392  0.35122    0.9307   0.37738
## 11  1.08863         1.608  -2.0638    4.241  0.08492    0.4752   0.17869
## 12  0.71710         1.516  -2.2550    3.689 -0.33254    0.4163  -0.79877
## 13  0.75397         1.536  -2.2561    3.764 -0.28240    0.4290  -0.65824
## 14  0.61517         1.537  -2.3981    3.628 -0.48585    0.4301  -1.12967
## 15  0.61538         1.536  -2.3960    3.627 -0.48552    0.4294  -1.13059
## 16  0.55900         1.588  -2.5533    3.671 -0.58160    0.4624  -1.25771
## 17  1.09712         1.250  -1.3526    3.547  0.09268    0.2230   0.41555
## 18  1.31539         1.221  -1.0781    3.709  0.27413    0.1998   1.37208
## 19  0.62875   *     1.240  -1.8023    3.060 -0.46402    0.2154  -2.15430
## 20  1.30504         1.203  -1.0525    3.663  0.26623    0.1847   1.44156
## 21  6.97838   *     2.240   2.5879   11.369  1.94282    0.8065   2.40895
## 22 25.84980  **     3.291  19.4001   32.299  3.25230    1.1911   2.73053
## 23 41.56222  **     3.966  33.7894   49.335  3.72719    1.3777   2.70540
## 24 52.47339 ***     2.698  47.1859   57.761  3.96031    0.9924   3.99067
## 25  0.37789 ***     1.294  -2.1583    2.914 -0.97314    0.2577  -3.77609
## 26  0.43782 ***     1.190  -1.8948    2.770 -0.82595    0.1741  -4.74543
## 27  2.04230 ***     1.207  -0.3230    4.408  0.71408    0.1880   3.79910
## 28  1.37203         1.631  -1.8249    4.569  0.31629    0.4892   0.64648
## 29  2.09214 ***     1.224  -0.3073    4.492  0.73819    0.2023   3.64919
## 30  0.56799         1.444  -2.2627    3.399 -0.56564    0.3676  -1.53880
## 31  1.43230   .     1.209  -0.9380    3.803  0.35928    0.1901   1.89012
## 32  0.52659 ***     1.178  -1.7813    2.835 -0.64133    0.1634  -3.92459
## 33  0.52893         1.572  -2.5519    3.610 -0.63690    0.4522  -1.40832
## 34  1.14600         1.270  -1.3434    3.635  0.13628    0.2391   0.57000
## 35  0.15623   *     2.562  -4.8659    5.178 -1.85645    0.9409  -1.97304
## 36  0.19514   .     2.676  -5.0499    5.440 -1.63406    0.9843  -1.66006
## 37  0.39256         2.702  -4.9040    5.689 -0.93506    0.9941  -0.94060
## 38  0.08250   .     3.693  -7.1553    7.320 -2.49493    1.3064  -1.90982
## 39  0.12080         3.809  -7.3443    7.586 -2.11361    1.3373  -1.58051
## 40  0.20760         3.810  -7.2608    7.676 -1.57214    1.3377  -1.17522
## 41  0.15618         4.690  -9.0355    9.348 -1.85675    1.5454  -1.20150
## 42  0.16127         4.687  -9.0245    9.347 -1.82470    1.5447  -1.18126
## 43  0.28994         4.761  -9.0408    9.621 -1.23807    1.5604  -0.79345
## 44  0.14365         3.375  -6.4705    6.758 -1.94038    1.2163  -1.59536
## 45  0.09046   *     3.197  -6.1757    6.357 -2.40289    1.1622  -2.06751
## 46  0.50594         3.805  -6.9514    7.963 -0.68133    1.3362  -0.50988
##       p.value
## 1  1.117e-01
## 2  8.705e-01
## 3  5.990e-01
## 4  6.146e-01
## 5  1.416e-01
## 6  9.518e-01
## 7  4.304e-01
## 8  1.387e-02
## 9  2.808e-01
## 10 7.060e-01
## 11 8.582e-01
## 12 4.246e-01
## 13 5.105e-01
## 14 2.588e-01
## 15 2.585e-01
## 16 2.087e-01
```

```
## 17 6.778e-01
## 18 1.703e-01
## 19 3.142e-02
## 20 1.497e-01
## 21 1.615e-02
## 22 6.416e-03
## 23 6.919e-03
## 24 6.990e-05
## 25 1.672e-04
## 26 2.332e-06
## 27 1.525e-04
## 28 5.181e-01
## 29 2.744e-04
## 30 1.241e-01
## 31 5.898e-02
## 32 9.184e-05
## 33 1.593e-01
## 34 5.688e-01
## 35 4.872e-02
## 36 9.716e-02
## 37 3.471e-01
## 38 5.640e-02
## 39 1.143e-01
## 40 2.401e-01
## 41 2.298e-01
## 42 2.377e-01
## 43 4.277e-01
## 44 1.109e-01
## 45 3.890e-02
## 46 6.102e-01
```

```
ns_demo_belief_barriers <- svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 + work + Q20 + Q
       design = svy_never_some_flipped,
       family = quasibinomial(link = "logit"))
print_svy_mod(ns_demo_belief_barriers)
```

```
##
## Call:
## svyglm(formula = Q13 ~ ppagecat + PPEDUCAT + income + PPREG4 +
##     work + Q20 + Q18_3 + Q18_5, design = svy_never_some_flipped,
##     family = quasibinomial(link = "logit"))
##
## Survey design:
## svydesign(ids = ~1, weights = ~weight, data = never_some_flipped[!is.na(never_some_flipped$weight),
##     ])
##
## Coefficients:
##                                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)                     -0.44850    0.46464  -0.965   0.3346
## ppagecat25-34                   -0.08400    0.27558  -0.305   0.7605
## ppagecat35-44                    0.25725    0.26481   0.971   0.3315
```

```
## ppagecat45-54                         0.14775    0.25284   0.584   0.5591
## ppagecat55-64                         0.36674    0.25692   1.427   0.1537
## ppagecat65-74                        -0.04172    0.29734  -0.140   0.8884
## ppagecat75+                           0.53306    0.47312   1.127   0.2601
## PPEDUCATHigh school                   0.34449    0.28692   1.201   0.2301
## PPEDUCATSome college                 -0.60558    0.28350  -2.136   0.0329
## PPEDUCATBachelor_s degree or higher -0.56715    0.28490  -1.991   0.0467
## income$10k to $25k                    0.10318    0.41689   0.248   0.8046
## income$25k to $50k                   -0.19997    0.36641  -0.546   0.5853
## income$50k to $75k                   -0.30427    0.38219  -0.796   0.4261
## income$75k to $100k                  -0.40667    0.38708  -1.051   0.2936
## income$100k to $150k                 -0.44277    0.37882  -1.169   0.2427
## incomeover $150k                     -0.43668    0.41435  -1.054   0.2921
## PPREG4Northeast                       0.08980    0.22000   0.408   0.6832
## PPREG4South                           0.25150    0.19614   1.282   0.2000
## PPREG4West                           -0.45239    0.20602  -2.196   0.0283
## workemployed                          0.24251    0.17214   1.409   0.1591
## Q20Somewhat effective                 0.57081    0.27207   2.098   0.0361
## Q20It varies from season to season    1.25443    0.29480   4.255 2.25e-05
## Q20Not effective                      2.14509    0.38404   5.586 2.87e-08
## Q20Don_t know                         2.32963    0.32722   7.119 1.85e-12
## Q18_3Yes                              0.72527    0.18241   3.976 7.42e-05
## Q18_5Yes                              0.75888    0.18701   4.058 5.26e-05
##
## (Intercept)
## ppagecat25-34
## ppagecat35-44
## ppagecat45-54
## ppagecat55-64
## ppagecat65-74
## ppagecat75+
## PPEDUCATHigh school
## PPEDUCATSome college                 *
## PPEDUCATBachelor_s degree or higher *
## income$10k to $25k
## income$25k to $50k
## income$50k to $75k
## income$75k to $100k
## income$100k to $150k
## incomeover $150k
## PPREG4Northeast
## PPREG4South
## PPREG4West                           *
## workemployed
## Q20Somewhat effective                *
## Q20It varies from season to season  ***
## Q20Not effective                    ***
## Q20Don_t know                       ***
## Q18_3Yes                            ***
## Q18_5Yes                            ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for quasibinomial family taken to be 0.9904011)
```

```
##
## Number of Fisher Scoring iterations: 4
##
##                                    term      or sig or_std_err or_lower
## 1                           (Intercept)  0.6386          1.591  -2.4806
## 2                         ppagecat25-34  0.9194          1.317  -1.6625
## 3                         ppagecat35-44  1.2934          1.303  -1.2609
## 4                         ppagecat45-54  1.1592          1.288  -1.3646
## 5                         ppagecat55-64  1.4430          1.293  -1.0911
## 6                         ppagecat65-74  0.9591          1.346  -1.6795
## 7                           ppagecat75+  1.7041          1.605  -1.4416
## 8                  PPEDUCATHigh school  1.4113          1.332  -1.2001
## 9                 PPEDUCATSome college  0.5458   *      1.328  -2.0567
## 10 PPEDUCATBachelor_s degree or higher  0.5671   *      1.330  -2.0389
## 11                  income$10k to $25k  1.1087          1.517  -1.8651
## 12                  income$25k to $50k  0.8188          1.443  -2.0086
## 13                  income$50k to $75k  0.7377          1.465  -2.1347
## 14                 income$75k to $100k  0.6659          1.473  -2.2206
## 15                income$100k to $150k  0.6423          1.461  -2.2204
## 16                    incomeover $150k  0.6462          1.513  -2.3200
## 17                     PPREG4Northeast  1.0940          1.246  -1.3483
## 18                         PPREG4South  1.2860          1.217  -1.0988
## 19                          PPREG4West  0.6361   *      1.229  -1.7723
## 20                        workemployed  1.2744          1.188  -1.0537
## 21               Q20Somewhat effective  1.7697   *      1.313  -0.8032
## 22  Q20It varies from season to season  3.5058 ***      1.343   0.8738
## 23                    Q20Not effective  8.5428 ***      1.468   5.6651
## 24                       Q20Don_t know 10.2741 ***      1.387   7.5554
## 25                            Q18_3Yes  2.0653 ***      1.200  -0.2869
## 26                            Q18_5Yes  2.1359 ***      1.206  -0.2272
##    or_upper estimate std.error statistic   p.value
## 1     3.758 -0.44850    0.4646   -0.9653 3.346e-01
## 2     3.501 -0.08400    0.2756   -0.3048 7.605e-01
## 3     3.848  0.25725    0.2648    0.9714 3.315e-01
## 4     3.683  0.14775    0.2528    0.5844 5.591e-01
## 5     3.977  0.36674    0.2569    1.4275 1.537e-01
## 6     3.598 -0.04172    0.2973   -0.1403 8.884e-01
## 7     4.850  0.53306    0.4731    1.1267 2.601e-01
## 8     4.023  0.34449    0.2869    1.2006 2.301e-01
## 9     3.148 -0.60558    0.2835   -2.1361 3.287e-02
## 10    3.173 -0.56715    0.2849   -1.9907 4.674e-02
## 11    4.082  0.10318    0.4169    0.2475 8.046e-01
## 12    3.646 -0.19997    0.3664   -0.5458 5.853e-01
## 13    3.610 -0.30427    0.3822   -0.7961 4.261e-01
## 14    3.552 -0.40667    0.3871   -1.0506 2.936e-01
## 15    3.505 -0.44277    0.3788   -1.1688 2.427e-01
## 16    3.612 -0.43668    0.4143   -1.0539 2.921e-01
## 17    3.536  0.08980    0.2200    0.4082 6.832e-01
## 18    3.671  0.25150    0.1961    1.2823 2.000e-01
## 19    3.045 -0.45239    0.2060   -2.1958 2.829e-02
## 20    3.603  0.24251    0.1721    1.4089 1.591e-01
## 21    4.343  0.57081    0.2721    2.0980 3.611e-02
## 22    6.138  1.25443    0.2948    4.2551 2.250e-05
## 23   11.421  2.14509    0.3840    5.5856 2.873e-08
```

```
## 24   12.993  2.32963    0.3272    7.1194 1.852e-12
## 25    4.418  0.72527    0.1824    3.9760 7.423e-05
## 26    4.499  0.75888    0.1870    4.0581 5.265e-05
```