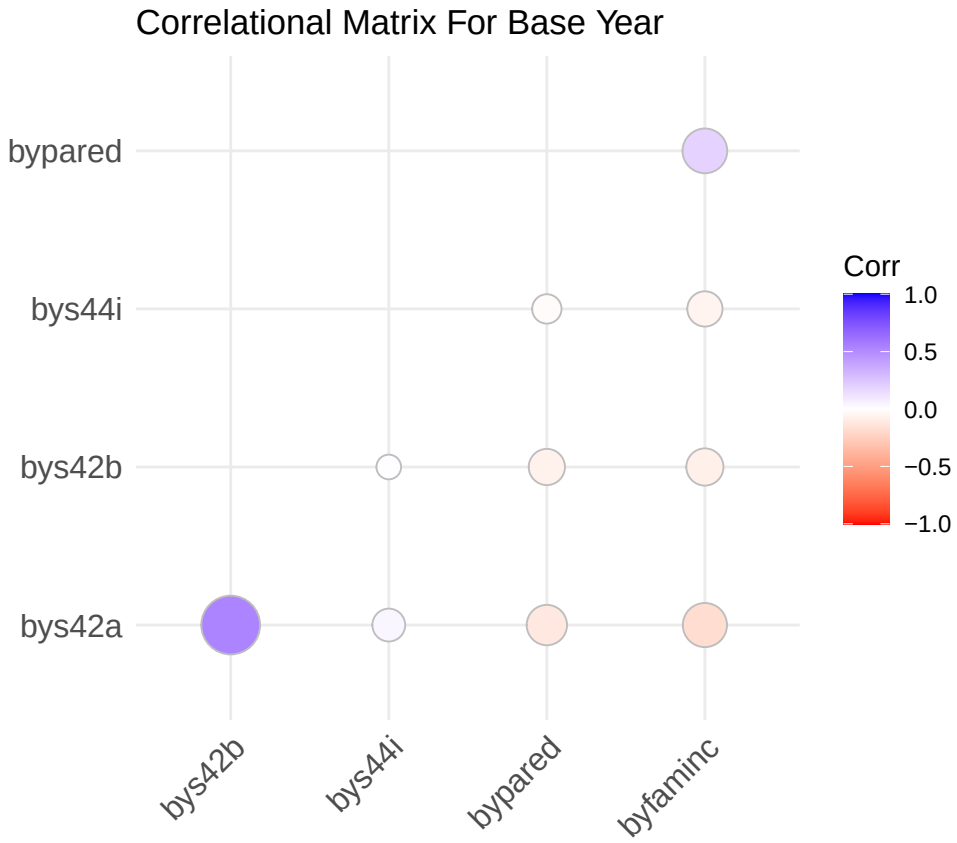
Presentation with Anna Shetler & Joe Risi

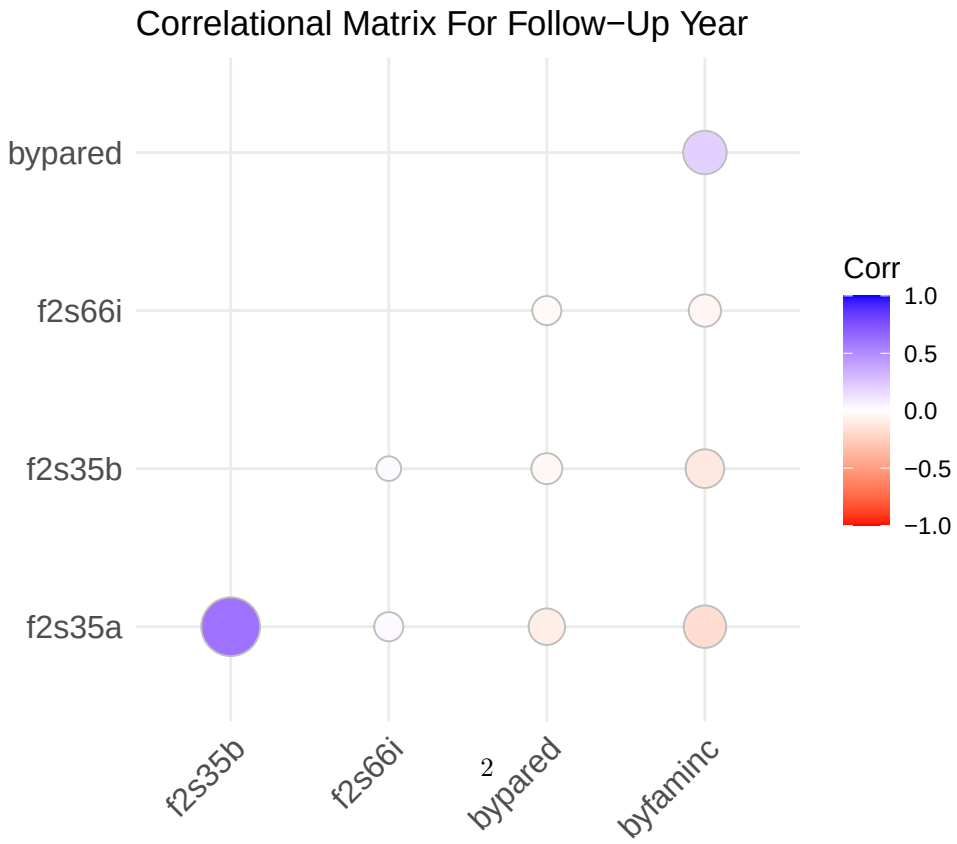
Seminar leadership question: Does watching too much television make you feel useless?

Packages

Read in data and clean data

Correlation Matrices, Nothing looks too correlated thankfully





Run Ordinal Logistic Regression

Run the model for the base year only including TV watching

```
##
## Re-fitting to get Hessian
```

```
## Call:
## MASS::polr(formula = bys44i ~ ., data = baseYearModel)
##
## Coefficients:
##           Value Std. Error t value
## bys42a  0.05355    0.01500  3.5704
## bys42b -0.01014    0.01375 -0.7379
##
## Intercepts:
##     Value    Std. Error t value
## 1|2  -1.7092   0.0586   -29.1812
## 2|3   0.1515   0.0545     2.7804
## 3|4   2.5781   0.0643    40.1174
##
## Residual Deviance: 21301.26
## AIC: 21311.26
```

```
##    bys42a    bys42b
##  5.500767 -1.009223
```

```
##
## Re-fitting to get Hessian
```

bys44i

Predictors

Odds Ratios

CI

p

1|2

0.18

0.18 – 0.19

<0.001

2|3

1.16

1.13 – 1.20

0.005

3|4

13.17

11.74 – 14.77

<0.001

bys42a

1.06

1.02 – 1.09

<0.001

bys42b

0.99

0.96 – 1.02

0.461

Observations

8829

R2 Nagelkerke

0.002

Run the model for the base year only including TV watching as a categorical varible

```
##
## Re-fitting to get Hessian
```

```
## Call:
## MASS::polr(formula = bys44i ~ ., data = baseYearModelWide)
##
## Coefficients:
##                            Value Std. Error t value
## bys42a.don.t.watch.tv  -0.10095    0.13962 -0.7231
## bys42a.lt.1.hour.a.day -0.24607    0.10163 -2.4212
## bys42a.1.2.hours       -0.24477    0.08325 -2.9402
## bys42a.2.3.hours       -0.22434    0.07982 -2.8106
## bys42a.3.4.hours       -0.19112    0.07996 -2.3903
## bys42a.4.5.hours       -0.04127    0.08366 -0.4932
## bys42b.don.t.watch.tv   0.19895    0.12473  1.5949
## bys42b.lt.1.hour.a.day  0.02845    0.09917  0.2869
## bys42b.1.2.hours       -0.09333    0.07755 -1.2036
## bys42b.2.3.hours       -0.06018    0.06965 -0.8640
## bys42b.3.4.hours       -0.04121    0.06786 -0.6073
## bys42b.4.5.hours       -0.11224    0.06733 -1.6670
##
## Intercepts:
##     Value    Std. Error t value
## 1|2  -2.0626   0.0654   -31.5191
## 2|3  -0.2000   0.0609    -3.2832
## 3|4   2.2308   0.0682    32.7105
##
## Residual Deviance: 21280.76
## AIC: 21310.76
```

```
##  bys42a.don.t.watch.tv bys42a.lt.1.hour.a.day       bys42a.1.2.hours
##              -9.602405             -21.813184             -21.711182
##       bys42a.2.3.hours       bys42a.3.4.hours       bys42a.4.5.hours
##             -20.095261             -17.396417              -4.042536
##  bys42b.don.t.watch.tv bys42b.lt.1.hour.a.day       bys42b.1.2.hours
```

```
##              22.011508               2.885788              -8.910882
##       bys42b.2.3.hours       bys42b.3.4.hours       bys42b.4.5.hours
##              -5.840096              -4.036926             -10.616701
```

```
##
## Re-fitting to get Hessian
```

bys44i

Predictors

Odds Ratios

CI

p

1|2

0.13

0.10 – 0.17

<0.001

2|3

0.82

0.67 – 1.00

0.001

3|4

9.31

7.91 – 10.96

<0.001

bys42a.don.t.watch.tv

0.90

0.69 – 1.19

0.470

bys42a.lt.1.hour.a.day

0.78

0.64 – 0.95

0.015

bys42a.1.2.hours

0.78

0.66 – 0.92

0.003

bys42a.2.3.hours

0.80

0.68 – 0.93

0.005

bys42a.3.4.hours

0.83

0.71 – 0.97

0.017

bys42a.4.5.hours

0.96

0.81 – 1.13

0.622

bys42b.don.t.watch.tv

1.22

0.96 – 1.56

0.111

bys42b.lt.1.hour.a.day

1.03

0.85 – 1.25

0.774

bys42b.1.2.hours

0.91

0.78 – 1.06

0.229

bys42b.2.3.hours

0.94

0.82 – 1.08

0.388

bys42b.3.4.hours

0.96

0.84 – 1.10

0.544

bys42b.4.5.hours

0.89

0.78 – 1.02

0.096

Observations

8829

R2 Nagelkerke

0.004

Run the model for the base year only with TV watching and controls

```
##
## Re-fitting to get Hessian
```

```
## Call:
## MASS::polr(formula = bys44i ~ ., data = baseYearModelControls)
##
## Coefficients:
##                               Value Std. Error t value
## bypared.h.s..grad.or.ged   -0.05970    0.08610 -0.6934
## bypared...hs.....4yr.deg   -0.15268    0.08041 -1.8987
## bypared.college.graduate   -0.12015    0.09399 -1.2783
## bypared.m.a..equivalent    -0.18487    0.10502 -1.7604
## bypared.ph.d...m.d...other -0.15511    0.12575 -1.2335
## bys42a                      0.03549    0.01543  2.3002
## bys42b                      0.01085    0.01390  0.7805
## sex.female                  0.55496    0.04021 13.8019
## race.amer.ind.ak.native    -0.34535    0.23401 -1.4758
## race.asian.pacific.islndr  -0.12046    0.07942 -1.5166
## race.black.not.hispanic    -0.39812    0.07980 -4.9891
## race.hispanic              -0.18244    0.06795 -2.6847
## byfaminc..10.000....19.999 -0.01787    0.08563 -0.2087
## byfaminc..20.000..24.999   -0.06088    0.09311 -0.6539
## byfaminc..25.000..34.999   -0.13819    0.08457 -1.6339
## byfaminc..35.000..49.999   -0.11694    0.08509 -1.3744
## byfaminc..50.000..74.999   -0.12868    0.09259 -1.3897
## byfaminc..75.000.and.above -0.46748    0.10708 -4.3658
##
## Intercepts:
##     Value    Std. Error t value
## 1|2  -1.7394   0.1109   -15.6815
## 2|3   0.1618   0.1088     1.4864
## 3|4   2.6315   0.1141    23.0606
##
## Residual Deviance: 21035.57
## AIC: 21077.57
```

```
##   bypared.h.s..grad.or.ged   bypared...hs.....4yr.deg
##                  -5.795283                 -14.159516
##   bypared.college.graduate    bypared.m.a..equivalent
##                 -11.321013                 -16.878413
## bypared.ph.d...m.d...other                      bys42a
##                 -14.368267                   3.612969
##                     bys42b                 sex.female
##                   1.090572                  74.187815
##    race.amer.ind.ak.native  race.asian.pacific.islndr
##                 -29.203072                 -11.348421
##    race.black.not.hispanic              race.hispanic
##                 -32.841973                 -16.676197
## byfaminc..10.000....19.999   byfaminc..20.000..24.999
##                  -1.770855                  -5.906270
```

```
##   byfaminc..25.000..34.999   byfaminc..35.000..49.999
##                  -12.906445                  -11.036040
##   byfaminc..50.000..74.999 byfaminc..75.000.and.above
##                  -12.074162                  -37.342046
```

```
##
## Re-fitting to get Hessian
```

bys44i

Predictors

Odds Ratios

CI

p

1|2

0.18

0.15 – 0.21

<0.001

2|3

1.18

1.00 – 1.38

0.137

3|4

13.89

11.56 – 16.70

<0.001

bypared.h.s..grad.or.ged

0.94

0.80 – 1.11

0.488

bypared. . . hs. 4yr.deg

0.86

0.73 – 1.00

0.058

bypared.college.graduate

0.89

0.74 – 1.07

0.201

bypared.m.a..equivalent

0.83

0.68 – 1.02

0.078

bypared.ph.d. . . m.d. . . other

0.86

0.67 – 1.10

0.217

bys42a

1.04

1.01 – 1.07

0.021

bys42b

1.01

0.98 – 1.04

0.435

sex.female

1.74

1.61 – 1.88

<0.001

race.amer.ind.ak.native

0.71

0.45 – 1.12

0.140

race.asian.pacific.islndr

0.89

0.76 – 1.04

0.129

race.black.not.hispanic

0.67

0.57 – 0.79

<0.001

race.hispanic

0.83

0.73 – 0.95

0.007

byfaminc..10.000. . . .19.999

0.98

0.83 – 1.16

0.835

byfaminc..20.000..24.999

0.94

0.78 – 1.13

0.513

byfaminc..25.000..34.999

0.87

0.74 – 1.03

0.102

byfaminc..35.000..49.999

0.89

0.75 – 1.05

0.169

byfaminc..50.000..74.999

0.88

0.73 – 1.05

0.165

byfaminc..75.000.and.above

0.63

0.51 – 0.77

<0.001

Observations

8829

R2 Nagelkerke

0.034

Run the model for the follow-up year only including TV watching

```
##
## Re-fitting to get Hessian
```

```
## Call:
## MASS::polr(formula = f2s66i ~ ., data = followYearModel)
##
## Coefficients:
##          Value Std. Error t value
## f2s35a 0.03199    0.02019  1.5847
## f2s35b 0.01403    0.01891  0.7417
##
## Intercepts:
```

```
##     Value    Std. Error t value
## 1|2  -1.6175   0.0574   -28.1646
## 2|3   0.3797   0.0538     7.0537
## 3|4   3.1578   0.0725    43.5708
##
## Residual Deviance: 18961.86
## AIC: 18971.86
```

```
##   f2s35a   f2s35b
## 3.250574 1.412537
```

```
##
## Re-fitting to get Hessian
```

f2s66i

Predictors

Odds Ratios

CI

p

1|2

0.20

0.19 – 0.21

<0.001

2|3

1.46

1.41 – 1.52

<0.001

3|4

23.52

21.01 – 26.32

<0.001

f2s35a

1.03

0.99 – 1.07

0.113

f2s35b

1.01

0.98 – 1.05

0.458

Observations

8192

R2 Nagelkerke

0.001

Run the model for the follow-up year only including TV watching as a categorical variable

```
##
## Re-fitting to get Hessian
```

```
## Call:
## MASS::polr(formula = f2s66i ~ ., data = followYearModelWide)
##
## Coefficients:
##                           Value Std. Error t value
## f2s35a.don.t.watch.tv -0.01718    0.14557 -0.1180
## f2s35a.less.1hr.day    0.01334    0.10997  0.1213
## f2s35a.1.2.hours.day  -0.03165    0.10385 -0.3048
## f2s35a.2.3.hours.day  -0.01842    0.09989 -0.1844
## f2s35a.3.5.hours.day   0.11032    0.09594  1.1498
## f2s35b.don.t.watch.tv -0.07334    0.13759 -0.5330
## f2s35b.less.1hr.day   -0.21049    0.09645 -2.1823
## f2s35b.1.2.hours.day  -0.13865    0.08414 -1.6478
## f2s35b.2.3.hours.day  -0.21144    0.07855 -2.6916
## f2s35b.3.5.hours.day  -0.19591    0.07511 -2.6082
##
## Intercepts:
##     Value    Std. Error t value
## 1|2  -1.8899   0.0821   -23.0208
## 2|3   0.1098   0.0789     1.3922
## 3|4   2.8920   0.0916    31.5651
##
## Residual Deviance: 18944.37
## AIC: 18970.37
```

```
## f2s35a.don.t.watch.tv   f2s35a.less.1hr.day  f2s35a.1.2.hours.day
##             -1.703393              1.343335             -3.115859
##  f2s35a.2.3.hours.day  f2s35a.3.5.hours.day f2s35b.don.t.watch.tv
##             -1.825407             11.663006             -7.071292
##   f2s35b.less.1hr.day  f2s35b.1.2.hours.day  f2s35b.2.3.hours.day
##            -18.981454            -12.946698            -19.057917
##  f2s35b.3.5.hours.day
##            -17.791081
```

```
##
## Re-fitting to get Hessian
```

f2s66i

Predictors

Odds Ratios

CI

p

1|2

0.15

0.11 – 0.20

<0.001

2|3

1.12

0.90 – 1.38

0.164

3|4

18.03

14.71 – 22.10

<0.001

f2s35a.don.t.watch.tv

0.98

0.74 – 1.31

0.906

f2s35a.less.1hr.day

1.01

0.82 – 1.26

0.903

f2s35a.1.2.hours.day

0.97

0.79 – 1.19

0.761

f2s35a.2.3.hours.day

0.98

0.81 – 1.19

0.854

f2s35a.3.5.hours.day

1.12

0.93 – 1.35

0.250

f2s35b.don.t.watch.tv

0.93

0.71 – 1.22

0.594

f2s35b.less.1hr.day

0.81

0.67 – 0.98

0.029

f2s35b.1.2.hours.day

0.87

0.74 – 1.03

0.099

f2s35b.2.3.hours.day

0.81

0.69 – 0.94

0.007

f2s35b.3.5.hours.day

0.82

0.71 – 0.95

0.009

Observations

8192

R2 Nagelkerke

0.003

Run the model for the follow-up year only including TV watching + controls

```
##
## Re-fitting to get Hessian
```

```
## Call:
## MASS::polr(formula = f2s66i ~ ., data = followYearModelControls)
##
## Coefficients:
##                               Value Std. Error  t value
## bypared.h.s..grad.or.ged   -0.062943    0.09483 -0.66377
## bypared...hs.....4yr.deg    0.044368    0.08913  0.49777
## bypared.college.graduate   -0.043264    0.10248 -0.42218
## bypared.m.a..equivalent    -0.010948    0.11227 -0.09751
## bypared.ph.d...m.d...other  0.009981    0.13309  0.07499
## f2s35a                      0.035172    0.02072  1.69749
## f2s35b                      0.017465    0.01904  0.91751
## sex.female                  0.555495    0.04189 13.26133
## race.amer.ind.ak.native     0.216166    0.24475  0.88323
## race.asian.pacific.islndr   0.275220    0.08201  3.35596
## race.black.not.hispanic    -0.426133    0.08374 -5.08887
## race.hispanic              -0.240565    0.07067 -3.40426
## byfaminc..10.000....19.999 -0.067241    0.09300 -0.72302
## byfaminc..20.000..24.999   -0.156406    0.10051 -1.55611
## byfaminc..25.000..34.999   -0.106506    0.09046 -1.17744
## byfaminc..35.000..49.999   -0.222143    0.09098 -2.44166
```

```
## byfaminc..50.000..74.999   -0.270172    0.09897 -2.72981
## byfaminc..75.000.and.above -0.386275    0.11352 -3.40275
##
## Intercepts:
##     Value    Std. Error t value
## 1|2  -1.5551   0.1201   -12.9494
## 2|3   0.4886   0.1186     4.1184
## 3|4   3.3075   0.1285    25.7470
##
## Residual Deviance: 18715.11
## AIC: 18757.11
```

```
##   bypared.h.s..grad.or.ged   bypared...hs.....4yr.deg
##                  -6.100254                   4.536707
##   bypared.college.graduate    bypared.m.a..equivalent
##                  -4.234145                  -1.088793
## bypared.ph.d...m.d...other                     f2s35a
##                   1.003072                   3.579836
##                     f2s35b                 sex.female
##                   1.761826                  74.280339
##    race.amer.ind.ak.native  race.asian.pacific.islndr
##                  24.130848                  31.682055
##    race.black.not.hispanic              race.hispanic
##                 -34.697077                 -21.381613
## byfaminc..10.000....19.999   byfaminc..20.000..24.999
##                  -6.503006                 -14.478793
##   byfaminc..25.000..34.999   byfaminc..35.000..49.999
##                 -10.103055                 -19.919950
##   byfaminc..50.000..74.999 byfaminc..75.000.and.above
##                 -23.675184                 -32.041635
```

```
##
## Re-fitting to get Hessian
```

f2s66i

Predictors

Odds Ratios

CI

p

1|2

0.21

0.18 – 0.25

<0.001

2|3

1.63

1.37 – 1.94

<0.001

3|4

27.32

22.35 – 33.39

<0.001

bypared.h.s..grad.or.ged

0.94

0.78 – 1.13

0.507

bypared. . . hs. 4yr.deg

1.05

0.88 – 1.24

0.619

bypared.college.graduate

0.96

0.78 – 1.17

0.673

bypared.m.a..equivalent

0.99

0.79 – 1.23

0.922

bypared.ph.d. . . m.d. . . other

1.01

0.78 – 1.31

0.940

f2s35a

1.04

0.99 – 1.08

0.090

f2s35b

1.02

0.98 – 1.06

0.359

sex.female

1.74

1.61 – 1.89

<0.001

race.amer.ind.ak.native

1.24

0.77 – 2.01

0.377

race.asian.pacific.islndr

1.32

1.12 – 1.55

0.001

race.black.not.hispanic

0.65

0.55 – 0.77

<0.001

race.hispanic

0.79

0.68 – 0.90

0.001

byfaminc..10.000. . . .19.999

0.93

0.78 – 1.12

0.470

byfaminc..20.000..24.999

0.86

0.70 – 1.04

0.120

byfaminc..25.000..34.999

0.90

0.75 – 1.07

0.239

byfaminc..35.000..49.999

0.80

0.67 – 0.96

0.015

byfaminc..50.000..74.999

0.76

0.63 – 0.93

0.006

byfaminc..75.000.and.above

0.68

0.54 – 0.85

0.001

Observations

8192

R2 Nagelkerke

0.034