Assignment seven

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Question one

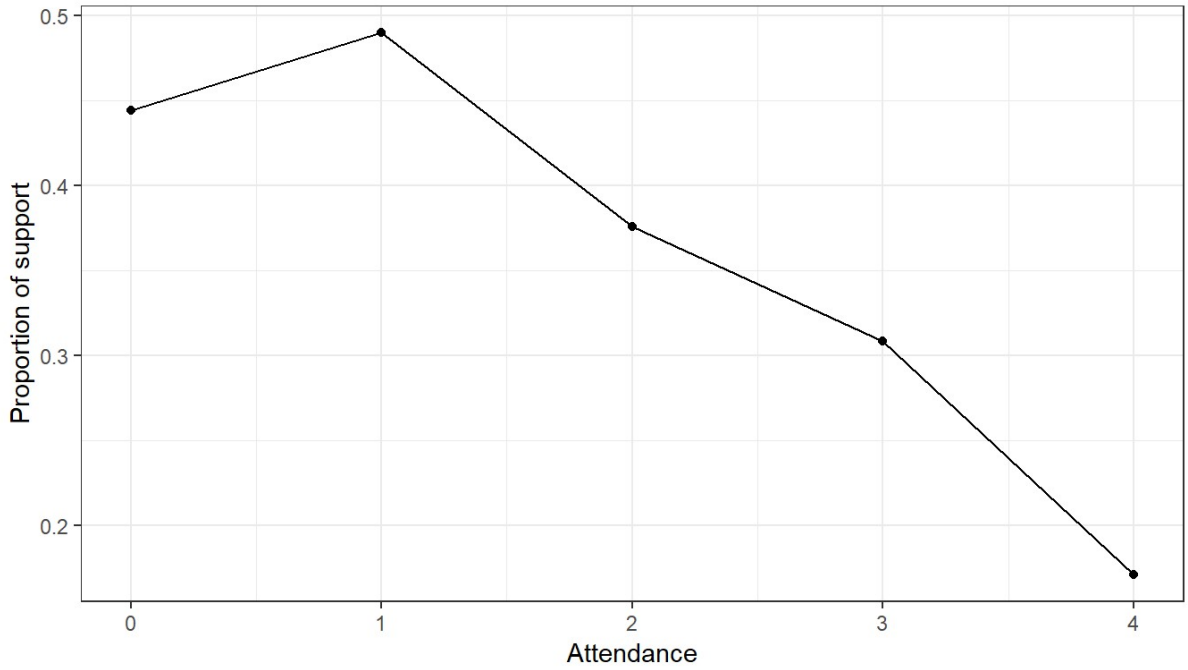

Figure 01: A line plot that shows the relationship between proportion of support and attendance

Question two

Table of Model Evidence for Two Working Hypotheses

Hypothesis	LL	K	AICc	Δ AICc	AIC Wt.	ER
Model including linear and quadratic effect of attendance	-1060.23	3	2126.47	0.00	1	1.00
Model including linear effect of attendance	-1068.46	2	2140.93	14.47	0	1385.85

Based on AIC value, Model one is the model including linear and quadratic effect of attendance.

Question four

For a person that attends religious services almost every week, their predicted log-odd of support are -0.86553 when there is both linear and quadratic effect of attendance For a person that attends religious services almost every week, their predicted odd of support are 0.421 when there is both linear and quadratic effect of attendance. For a person that attends religious services almost every week, the probability of support is 0.42 times that of a person that does not attend religious services almost every week.

Question five

Yes, there are sample differences in the proportion of people who support same-sex marriage between the denominations. The evidence from sample data is given:

```
## # A tibble: 4 x 3
##   denomination     N  Prop
##   <fct>        <int> <dbl>
## 1 Catholic       477 0.426
## 2 Jewish          22 0.773
## 3 Other          714 0.333
## 4 Protestant     533 0.255
```

Question six

Jewish, on average, have a predicted log-odds of support that is 2.29 higher than Protestant, after controlling for differences in Catholic and Other Jewish, on average, have a predicted odds of support that is 9.92 higher than Protestant, after controlling for differences in Catholic and Other

Question seven

The Pseudo-R^2 values for Model 3 is 0.06851273. Pseudo-R^2 values is the proportion of deviance reduction that is (Null or Baseline Deviance - Deviance NEW) / Null or Baseline Deviance.

Question eight

```
## # A tibble: 4 x 5
##   rowname  support  friends      age  female
##   <chr>      <dbl>    <dbl>    <dbl>   <dbl>
## 1 support  NA        0.221   -0.244   0.0547
## 2 friends   0.221   NA       -0.212   0.0919
## 3 age      -0.244   -0.212   NA       0.0215
## 4 female    0.0547   0.0919   0.0215 NA
```

Based on this correlation matrix, the most important covariate is age. The second important covariate is friends and the last one is female.

Question nine

Table of Model Evidence for Three Working Hypotheses

Hypothesis	LL	K	AICc	Δ AICc	AIC Wt.	ER
Model including age, friends, and female	-979.74	9	1977.58	0.00	0.96	1.000000e+00
Model including age and friends	-983.88	8	1983.84	6.25	0.04	2.281000e+01
Model including age	-1007.37	7	2028.80	51.22	0.00	1.324794e+11

The third model would include the effects of religious attendance, denomination, and all three covariates is adopted based on the AIC value.

Question 11

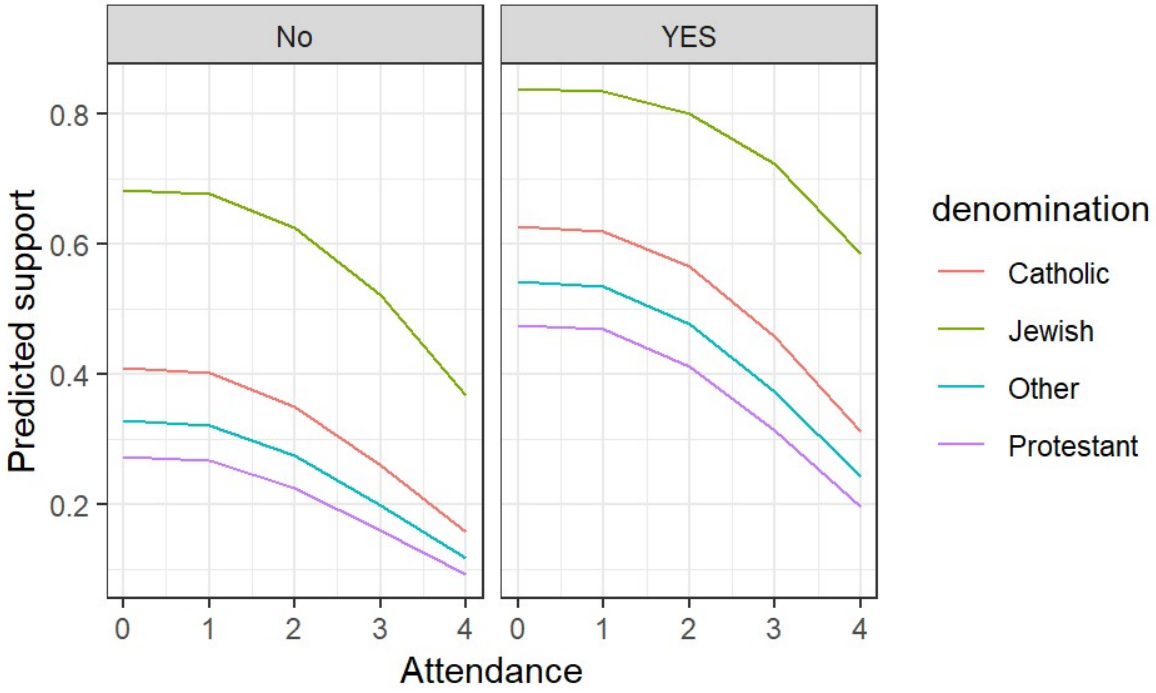

Figure 02: A plot that shows the relationship between support, denomination, friends, and attendance

Question 12

From the plot, it is shown that persons who attend religious service every week show less suport than persons who attend never, few times a year, once or twice a month, and almost every week. The support is decreasing with increase of attendance in religiois service for all denomination (Catholic,

Jewish, Other and Protestant). In the case of denomination, Jewish shows highest support than other three denomination. After that Catholic shows higher support than Other and protestant. It indicates that religion is an important focal predictor in supporting same sex marriage.