

Tyler Fuller data analysis

```
library(haven)
library(tidyverse)
```

```
-- Attaching core tidyverse packages ━━━━━━━━━━ tidyverse 2.0.0 ━━━━━━━━
✓ dplyr     1.1.4      ✓ readr     2.1.5
✓ forcats   1.0.0      ✓ stringr   1.5.2
✓ ggplot2   4.0.0      ✓ tibble    3.3.0
✓ lubridate 1.9.4      ✓ tidyr    1.3.1
✓ purrr    1.1.0

-- Conflicts ━━━━━━━━━━ tidyverse_conflicts() ━━━━━━━━
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()   masks stats::lag()
ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

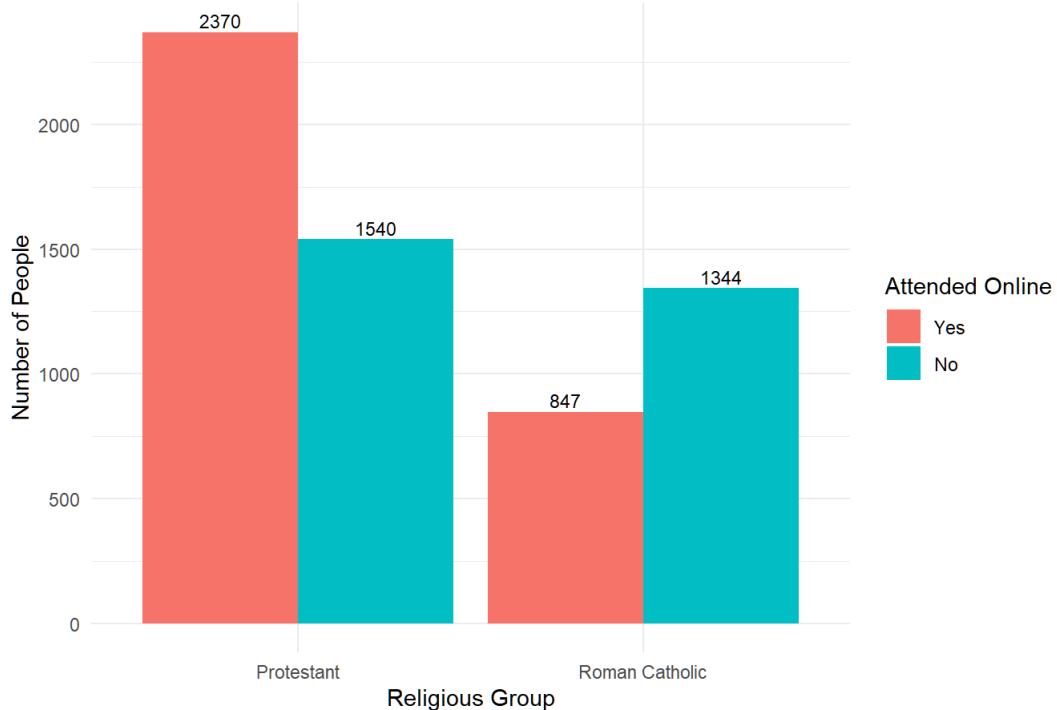
```
w70 <- read_sav("ATP_W70.sav")
w84 <- read_sav("ATP_W84.sav")
```

```
df <- w70 %>%
  select(ATTENDMONTH_W70, ATTENDONLINE_W70, F_RELIG, F_SEX, F_AGECAT) %>%
  filter(if_all(everything(), ~ .x != 99)) %>%
  filter(F_RELIG == 1 | F_RELIG == 2)

df2 <- w84 %>%
  select(ATTENDMONTH_W84, ATTENDONLINE_W84, F_RELIG, F_GENDER, F_AGECAT) %>%
  filter(if_all(everything(), ~ .x != 99)) %>%
  filter(F_RELIG == 1 | F_RELIG == 2)

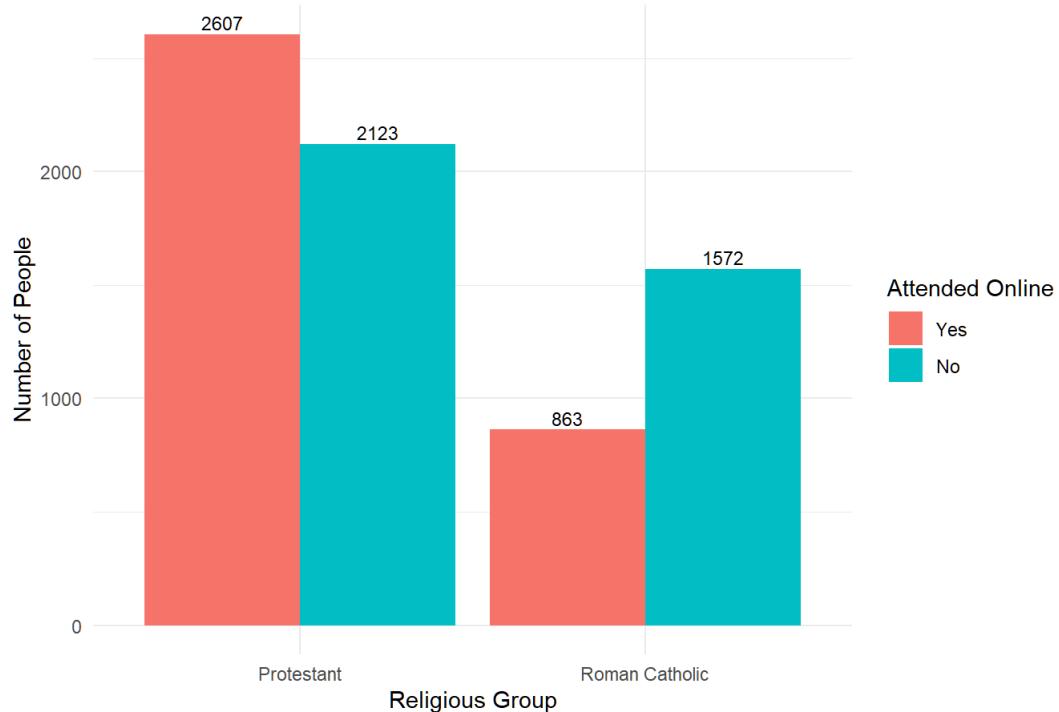
#Attend form VS Religion ONLINE (WAVE70)
ggplot(df, aes(x = factor(F_RELIG), fill = factor(ATTENDONLINE_W70))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Number of Respondents Attending Online Worship by Religion(July 2020)",
    x = "Religious Group",
    y = "Number of People",
    fill = "Attended Online"
  ) +
  scale_x_discrete(labels = c("1" = "Protestant", "2" = "Roman Catholic")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) + # 🤝 这一行
  theme_minimal()
```

Number of Respondents Attending Online Worship by Religion(July 2020)



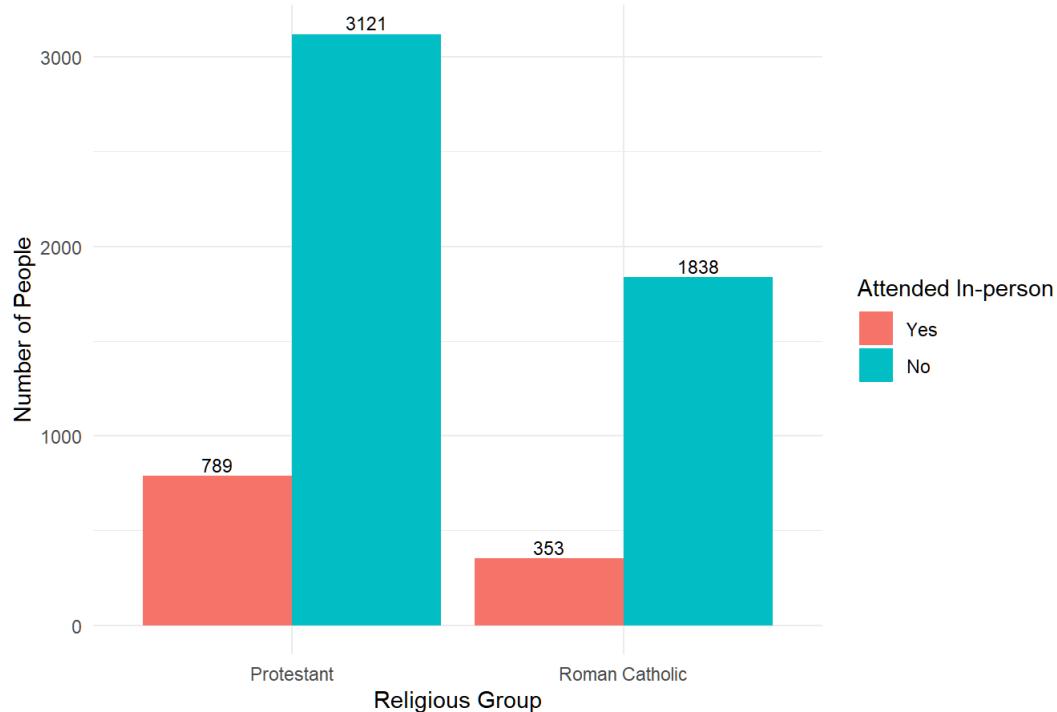
```
#Attend form VS Religion ONLINE (WAVE84)
ggplot(df2, aes(x = factor(F_RELIG), fill = factor(ATTENDONLINE_W84))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Number of Respondents Attending Online Worship by Religion(March 2021)",
    x = "Religious Group",
    y = "Number of People",
    fill = "Attended Online"
  ) +
  scale_x_discrete(labels = c("1" = "Protestant", "2" = "Roman Catholic")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) +
  theme_minimal()
```

Number of Respondents Attending Online Worship by Religion(March 2021)



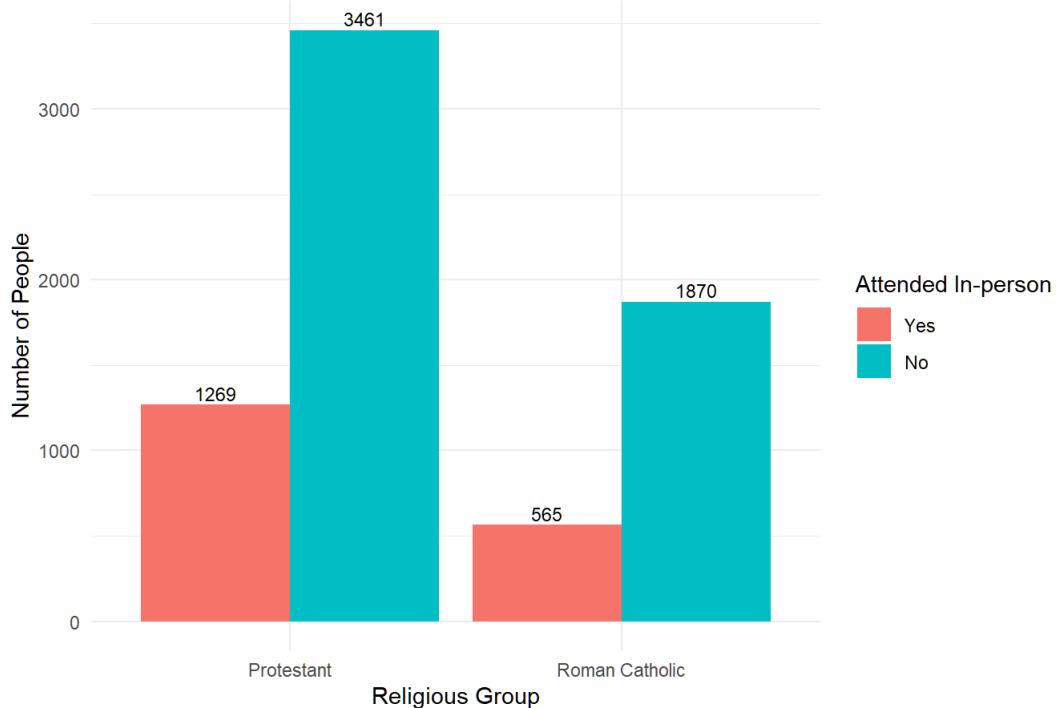
```
#Attend form VS Religion INPERSON (WAVE70)
ggplot(df, aes(x = factor(F_RELIG), fill = factor(ATTENDMONTH_W70))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Number of Respondents Attending In-person Worship by Religion(July 2020)",
    x = "Religious Group",
    y = "Number of People",
    fill = "Attended In-person"
  ) +
  scale_x_discrete(labels = c("1" = "Protestant", "2" = "Roman Catholic")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) +
  theme_minimal()
```

Number of Respondents Attending In-person Worship by Religion(July 2020)



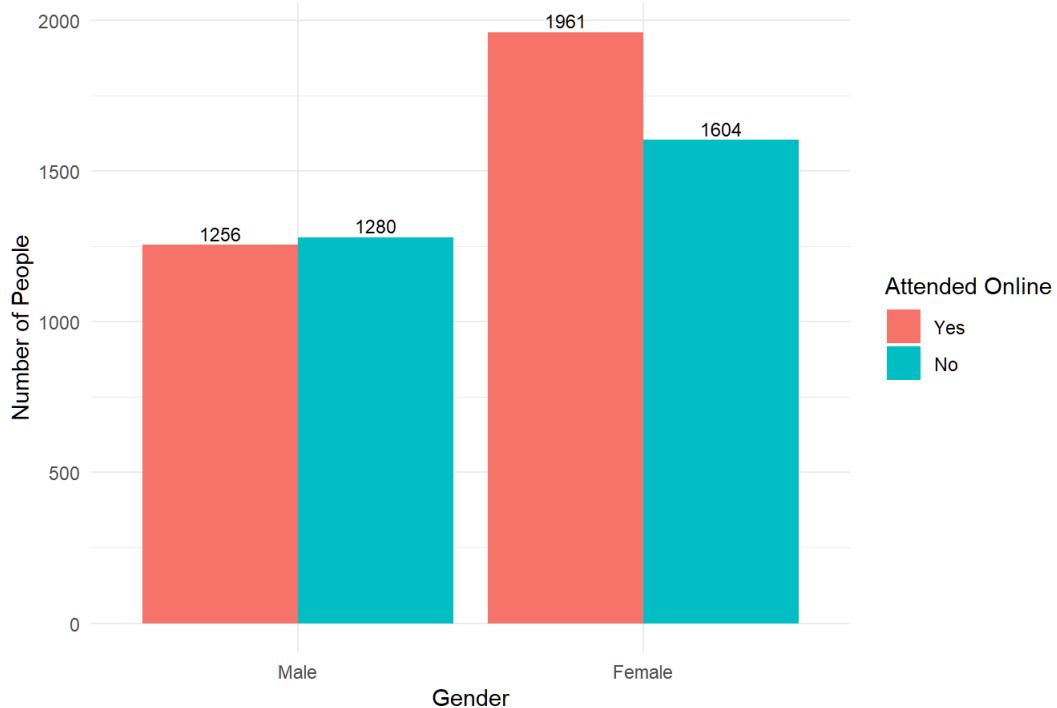
```
#Attend form VS Religion INPERSON (WAVE84)
ggplot(df2, aes(x = factor(F_RELIG), fill = factor(ATTENDMONTH_W84))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Number of Respondents Attending In-person Worship by Religion(March 2021)",
    x = "Religious Group",
    y = "Number of People",
    fill = "Attended In-person"
  ) +
  scale_x_discrete(labels = c("1" = "Protestant", "2" = "Roman Catholic")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) +
  theme_minimal()
```

Number of Respondents Attending In-person Worship by Religion(March 2021)



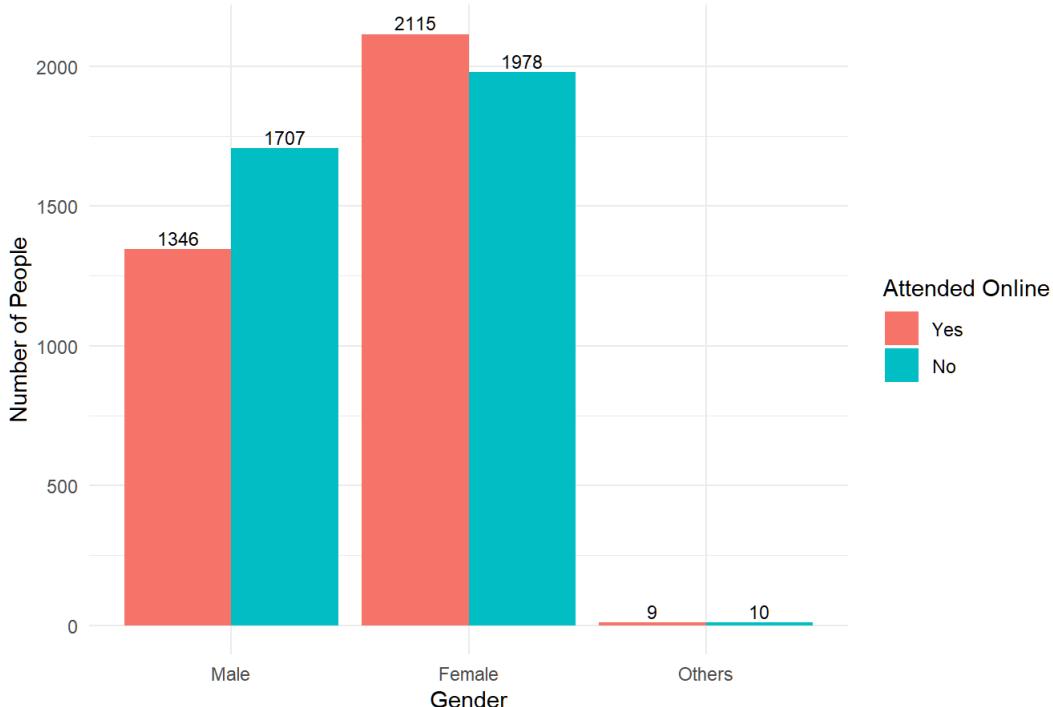
```
#Attend form VS Gender(WAVE70)
ggplot(df, aes(x = factor(F_SEX), fill = factor(ATTENDONLINE_W70))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Number of Respondents Attending Online Worship by Gender(July 2020)",
    x = "Gender",
    y = "Number of People",
    fill = "Attended Online"
  ) +
  scale_x_discrete(labels = c("1" = "Male", "2" = "Female")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) + # 👇 这一行
  theme_minimal()
```

Number of Respondents Attending Online Worship by Gender(July 2020)



```
#Attend form VS Gender(WAVE84)
ggplot(df2, aes(x = factor(F_GENDER), fill = factor(ATTENDONLINE_W84))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  scale_x_discrete(labels = c("1" = "Male", "2" = "Female", "3" = "Others")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) +
  labs(
    title = "Number of Respondents Attending Online Worship by Gender (March 2021)",
    x = "Gender",
    y = "Number of People",
    fill = "Attended Online"
  ) +
  theme_minimal()
```

Number of Respondents Attending Online Worship by Gender (March 2021)



```

online <- w70$ATTENDONLINE_W70
inperson <- w70$ATTENDMONTH_W70
threat <- w70$COVIDTHREAT_b_W70

df <- w70 %>%
  select(ATTENDMONTH_W70, ATTENDONLINE_W70, COVIDTHREAT_a_W70) %>%
  filter(if_all(everything(), ~ .x != 99)) %>%
  mutate(
    attend_online = ifelse(ATTENDONLINE_W70 == 1, 1, 0),
    attend_inperson = ifelse(ATTENDMONTH_W70 == 1, 1, 0),
    threat = 4 - COVIDTHREAT_a_W70
  )

model_h1a <- glm(attend_online ~ threat, data = df, family = binomial)
summary(model_h1a)

```

Call:
`glm(formula = attend_online ~ threat, family = binomial, data = df)`

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.12680	0.10121	-1.253	0.21
threat	-0.15707	0.03729	-4.212	2.53e-05 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

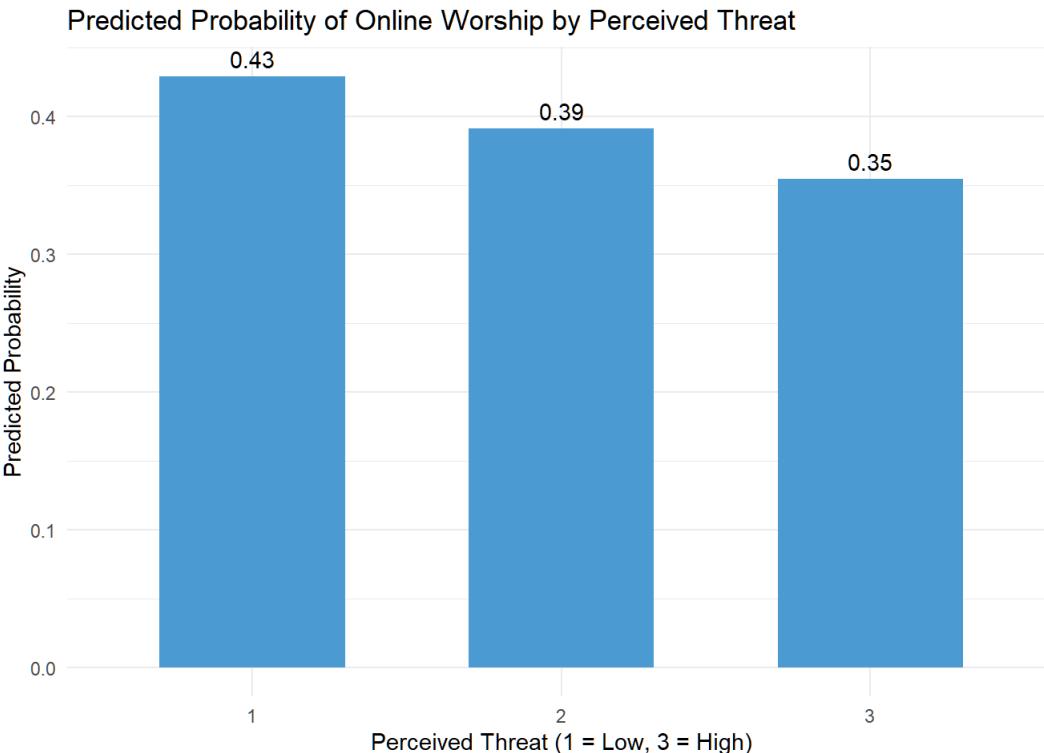
Null deviance: 13332 on 10140 degrees of freedom
 Residual deviance: 13315 on 10139 degrees of freedom
 AIC: 13319

Number of Fisher Scoring iterations: 4

```
df$pred <- predict(model_h1a, type = "response")
```

```
ggplot(df, aes(x = factor(threat), y = pred)) +
  stat_summary(fun = mean, geom = "bar", fill = "#4B9CD3", width = 0.6) +
  geom_text(stat = "summary", fun = mean,
            aes(label = round(..y.., 2)), vjust = -0.5) +
  labs(
    title = "Predicted Probability of Online Worship by Perceived Threat",
    x = "Perceived Threat (1 = Low, 3 = High)",
    y = "Predicted Probability"
  ) +
  theme_minimal()
```

Warning: The dot-dot notation (`..y..`) was deprecated in ggplot2 3.4.0.
i Please use `after_stat(y)` instead.



```
model_h1b <- glm(attend_inperson ~ threat,
                   data = df,
                   family = binomial)

summary(model_h1b)
```

Call:
glm(formula = attend_inperson ~ threat, family = binomial, data = df)

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.13787	0.12121	1.137	0.255
threat	-0.80016	0.04733	-16.906	<2e-16 ***

Signif. codes: 0 '****' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 7743.7 on 10140 degrees of freedom
Residual deviance: 7474.8 on 10139 degrees of freedom
AIC: 7478.8

Number of Fisher Scoring iterations: 4

```

#| label: create respond variable attend
# w70_cp <- w70 %>%
#   filter(F_RELIG %in% c(1,2)) %>%
#   filter(ATTENDMONTH_W70 != 99, ATTENDONLINE_W70 != 99) %>%
#   mutate(attend = (ATTENDMONTH_W70 - 1) * 2 + ATTENDONLINE_W70)
# w70_cp$attend <- as.factor(w70_cp$attend)
# -----
# ATTENDMONTH_W70 = attend mass in person
# ATTENDONLINE_W70 = attend mass online
#
# attend codes:
# 1 -> attend in person = 1, online = 1 (attend both)
# 2 -> attend in person = 1, online = 2 (only in person)
# 3 -> attend in person = 2, online = 1 (only online)
# 4 -> attend in person = 2, online = 2 (attend neither)
#
# Note: rows with v1 == 99 or v2 == 99 are removed
# ----

#model_multi <- multinom(attend ~ ., data = w70_cp)
#summary(model_multi)
# 错误于multinom(attend ~ ., data = w70_cp2):
#   need two or more classes to fit a multinom model
# 此外: 警告信息:
# In multinom(attend ~ ., data = w70_cp2) : groups '1' '2' '3' '4' are empty

```

```

w70_cp <- w70 %>%
  filter(F_RELIG %in% c(1,2)) %>%
  filter(ATTENDMONTH_W70 != 99, ATTENDONLINE_W70 != 99)
w70_cp %>%
  group_by(ATTENDMONTH_W70) %>%
  summarise(
    mean_month = mean(ATTENDMONTH_W70, na.rm = TRUE),
    sd_month = sd(ATTENDMONTH_W70, na.rm = TRUE),
    n = n()
  )

```

```

# A tibble: 2 × 4
#> #>   ATTENDMONTH_W70      mean_month  sd_month     n
#> #>   <dbl+lbl>          <dbl>       <dbl> <int>
1 1 [Yes, attended religious services in person in th...      1        0  1151
2 2 [No, did not attend religious services in person ...      2        0  5002

```

```

w70_cp %>%
  group_by(ATTENDONLINE_W70) %>%
  summarise(
    mean_month = mean(ATTENDONLINE_W70, na.rm = TRUE),
    sd_month = sd(ATTENDONLINE_W70, na.rm = TRUE),
    n = n()
  )

```

```

# A tibble: 2 × 4
#> #>   ATTENDONLINE_W70      mean_month  sd_month     n
#> #>   <dbl+lbl>          <dbl>       <dbl> <int>
1 1 [Yes, have watched religious services online or o...      1        0  3257
2 2 [No, have not watched religious services online o...      2        0  2896

```

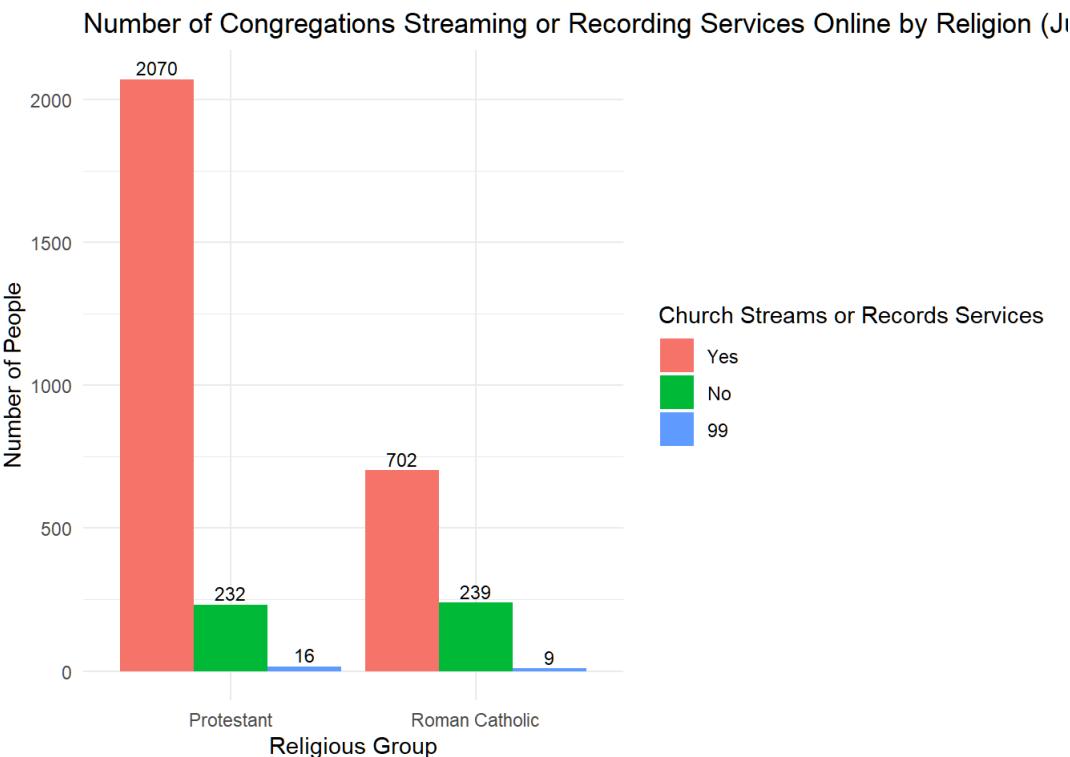
```

# w70_cp2 <- w70_cp %>%
#   mutate(across(c(F_AGECAT, F_SEX, F_EDUCCAT, F_MARITAL), as_factor))
#
# model <- glm((ATTENDMONTH_W70-1) ~ F_AGECAT + F_SEX + F_EDUCCAT + F_MARITAL,
#               data = w70_cp2,
#               family = binomial)
#
# summary(model)

```

```
w70_cp_clean <- w70_cp
w70_cp_clean$ATTENDMONTH_W70 <- as.character(w70_cp_clean$ATTENDMONTH_W70)
w70_cp_clean$ATTENDMONTH_bin <- ifelse(
  w70_cp_clean$ATTENDMONTH_W70 == "1",
  1, 0
)

# COVIDCONG2_W70
# Regardless of whether it is now open to the public, is the house of worship you attend most often CURRENTLY
ggplot(w70_cp %>% filter(!is.na(COVIDCONG2_W70)), aes(x = factor(F_RELIG), fill = factor(COVIDCONG2_W70))) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Number of Congregations Streaming or Recording Services Online by Religion (July 2020)",
    x = "Religious Group",
    y = "Number of People",
    fill = "Church Streams or Records Services"
  ) +
  scale_x_discrete(labels = c("1" = "Protestant", "2" = "Roman Catholic")) +
  scale_fill_discrete(labels = c("1" = "Yes", "2" = "No")) +
  theme_minimal()
```



```
# analysis
model_1 <- glm(ATTENDMONTH_bin ~ COVIDCONG2_W70, data = w70_cp_clean, family = binomial)

summary(model_1)
```

```
Call:
glm(formula = ATTENDMONTH_bin ~ COVIDCONG2_W70, family = binomial,
     data = w70_cp_clean)
```

```
Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.606905   0.037521 -16.175 <2e-16 ***
COVIDCONG2_W70 -0.001311   0.004380  -0.299    0.765
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

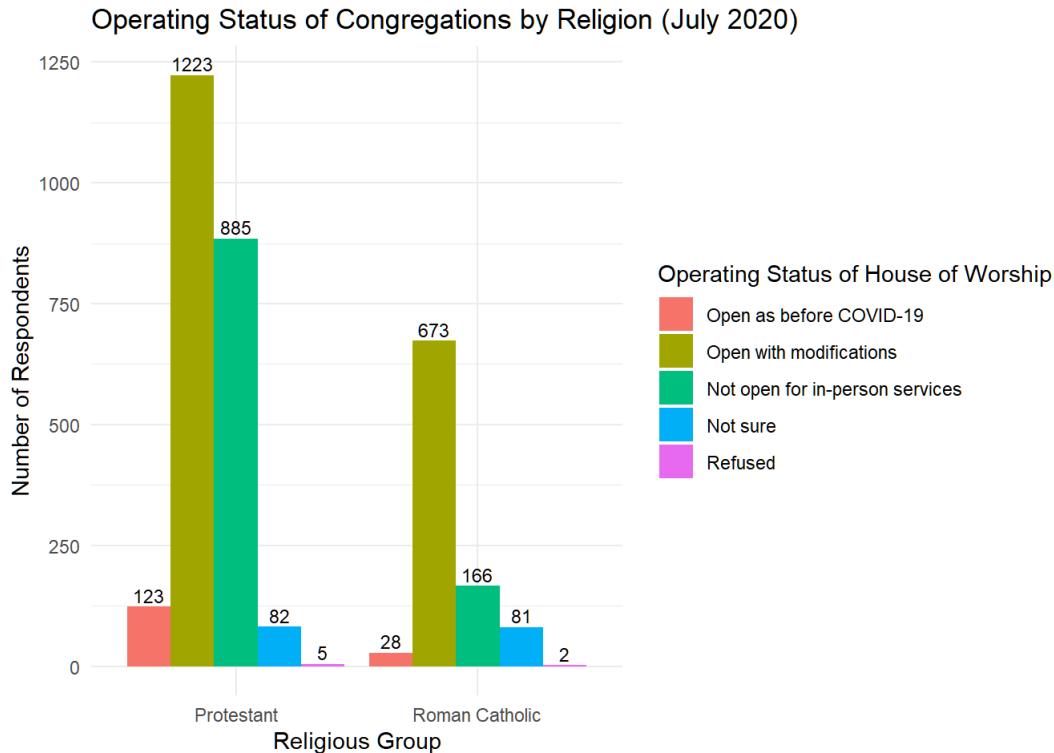
(Dispersion parameter for binomial family taken to be 1)

```
Null deviance: 4240.6 on 3267 degrees of freedom
Residual deviance: 4240.5 on 3266 degrees of freedom
(2885 observations deleted due to missingness)
AIC: 4244.5
```

Number of Fisher Scoring iterations: 4

null deviance vs residual deviance not great difference. This indicates that the model fit was not significantly better than the empty model (meaning that COVIDCONG2_W70 had little impact on religious attendance behavior).

```
# COVIDCONG3_W70.
# Which of the following best describes the current operating status of the house of worship you attend m
ggplot(w70_cp%>% filter(!is.na(COVIDCONG3_W70)), aes(x = factor(F_RELIG), fill = factor(COVIDCONG3_W70)))
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Operating Status of Congregations by Religion (July 2020)",
    x = "Religious Group",
    y = "Number of Respondents",
    fill = "Operating Status of House of Worship"
  ) +
  scale_x_discrete(labels = c(
    "1" = "Protestant",
    "2" = "Roman Catholic"
  )) +
  scale_fill_discrete(labels = c(
    "1" = "Open as before COVID-19",
    "2" = "Open with modifications",
    "3" = "Not open for in-person services",
    "4" = "Not sure",
    "99" = "Refused"
  )) +
  theme_minimal()
```



```
model_2 <- glm(
  ATTENDMONTH_bin ~ COVIDCONG3_W70,
  data = w70_cp_clean,
  family = binomial
)
```

Warning: glm.fit: fitted probabilities numerically 0 or 1 occurred

```
summary(model_2)
```

```
Call:
glm(formula = ATTENDMONTH_bin ~ COVIDCONG3_W70, family = binomial,
     data = w70_cp_clean)
```

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	3.17388	0.18429	17.22	<2e-16 ***
COVIDCONG3_W70	-1.66357	0.08246	-20.18	<2e-16 ***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

```
Null deviance: 4240.6 on 3267 degrees of freedom
Residual deviance: 3654.4 on 3266 degrees of freedom
(2885 observations deleted due to missingness)
```

AIC: 3658.4

Number of Fisher Scoring iterations: 6

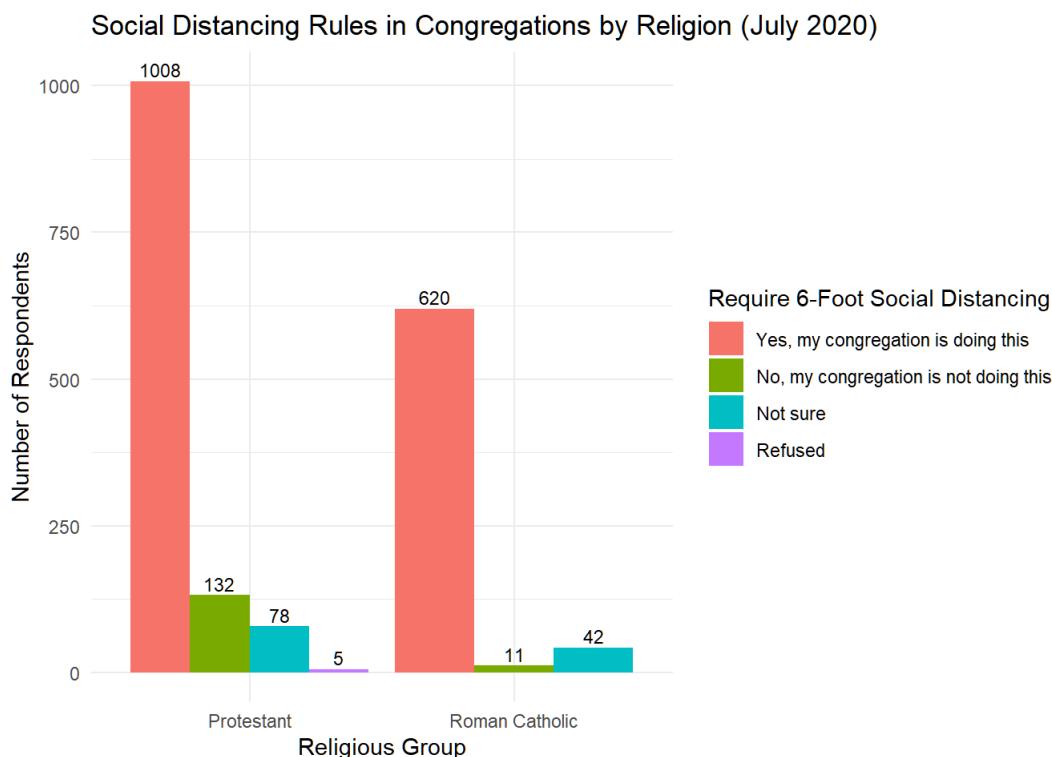
People were far less likely to attend in-person religious services when their congregations were closed, modified, or uncertain about reopening compared with those fully open before COVID-19. Overall, restricted or unclear operating conditions greatly reduced in-person religious participation.

```
# CONGRESTRRICT1_a_W70.
# Which of the following, if any, is the house of worship you attend most often CURRENTLY doing as a result
ggplot(w70_cp%>% filter(!is.na(CONGRESTRRICT1_a_W70)), aes(x = factor(F_RELIG), fill = factor(CONGRESTRRICT1
  geom_bar(position = "dodge") +
  geom_text(
```

```

stat = "count",
aes(label = after_stat(count)),
position = position_dodge(width = 0.9),
vjust = -0.3,
size = 3
) +
labs(
  title = "Social Distancing Rules in Congregations by Religion (July 2020)",
  x = "Religious Group",
  y = "Number of Respondents",
  fill = "Require 6-Foot Social Distancing"
) +
scale_x_discrete(labels = c(
  "1" = "Protestant",
  "2" = "Roman Catholic"
)) +
scale_fill_discrete(labels = c(
  "1" = "Yes, my congregation is doing this",
  "2" = "No, my congregation is not doing this",
  "3" = "Not sure",
  "99" = "Refused"
)) +
theme_minimal()

```



```

model_3 <- glm(ATTENDMONTH_bin ~ CONGRESTRICT1_a_W70,
                 data = w70_cp_clean,
                 family = binomial)
summary(model_3)

```

Call:
`glm(formula = ATTENDMONTH_bin ~ CONGRESTRICT1_a_W70, family = binomial,
 data = w70_cp_clean)`

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.0146136	0.0478194	-0.306	0.760
CONGRESTRICT1_a_W70	-0.0001059	0.0091066	-0.012	0.991

```
(Dispersion parameter for binomial family taken to be 1)
```

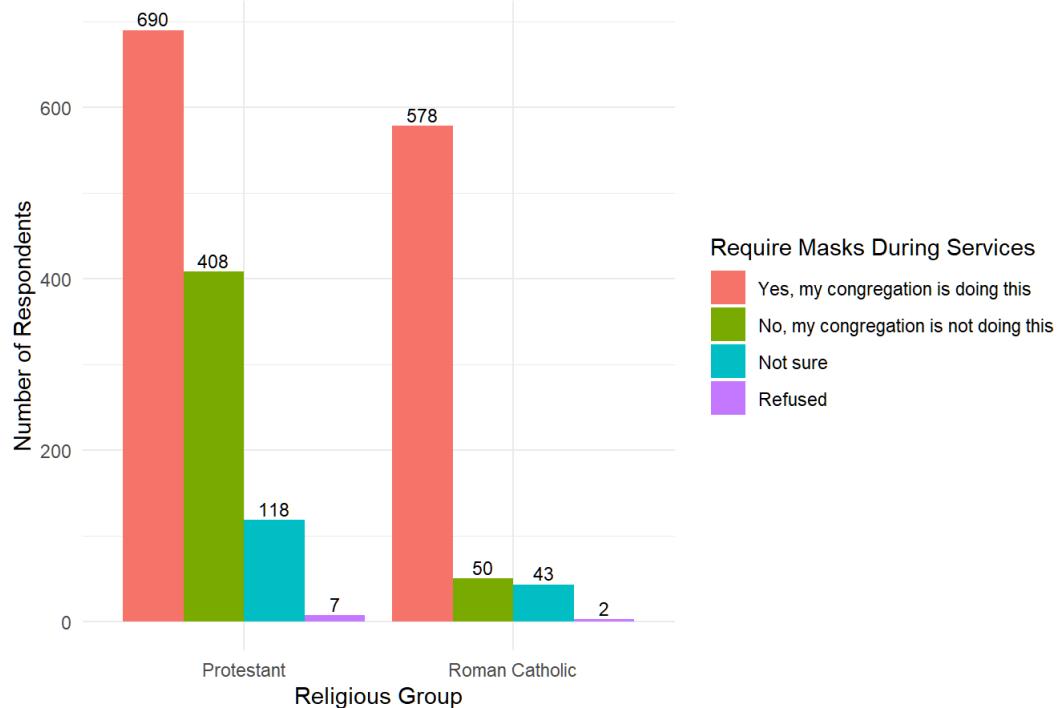
```
Null deviance: 2628.3 on 1895 degrees of freedom
Residual deviance: 2628.3 on 1894 degrees of freedom
(4257 observations deleted due to missingness)
AIC: 2632.3
```

Number of Fisher Scoring iterations: 3

People whose congregations did not require six-foot distancing were significantly more likely to have attended in-person services than those whose congregations did. Those who were not sure about distancing rules were much less likely to attend.

```
# CONGRESTRICT1_b_W70.
# Which of the following, if any, is the house of worship you attend most often CURRENTLY doing as a result
ggplot(w70_cp%>% filter(!is.na(CONGRESTRICT1_b_W70)), aes(x = factor(F_RELIG), fill = factor(CONGRESTRICT1
geom_bar(position = "dodge") +
geom_text(
  stat = "count",
  aes(label = after_stat(count)),
  position = position_dodge(width = 0.9),
  vjust = -0.3,
  size = 3
) +
labs(
  title = "Mask Requirements in Congregations by Religion (July 2020)",
  x = "Religious Group",
  y = "Number of Respondents",
  fill = "Require Masks During Services"
) +
scale_x_discrete(labels = c(
  "1" = "Protestant",
  "2" = "Roman Catholic"
)) +
scale_fill_discrete(labels = c(
  "1" = "Yes, my congregation is doing this",
  "2" = "No, my congregation is not doing this",
  "3" = "Not sure",
  "99" = "Refused"
)) +
theme_minimal()
```

Mask Requirements in Congregations by Religion (July 2020)



```
model_4 <- glm(ATTENDMONTH_bin ~ CONGRESTRICT1_b_W70,
                 data = w70_cp_clean,
                 family = binomial)
summary(model_4)
```

Call:
`glm(formula = ATTENDMONTH_bin ~ CONGRESTRICT1_b_W70, family = binomial,
 data = w70_cp_clean)`

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.001084	0.047812	-0.023	0.982
CONGRESTRICT1_b_W70	-0.007370	0.007267	-1.014	0.310

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 2628.3 on 1895 degrees of freedom
 Residual deviance: 2627.2 on 1894 degrees of freedom
 (4257 observations deleted due to missingness)
 AIC: 2631.2

Number of Fisher Scoring iterations: 3

People whose congregations did not require masks were significantly more likely to attend in-person religious services than those whose congregations did. Those who were unsure about mask rules were much less likely to attend.

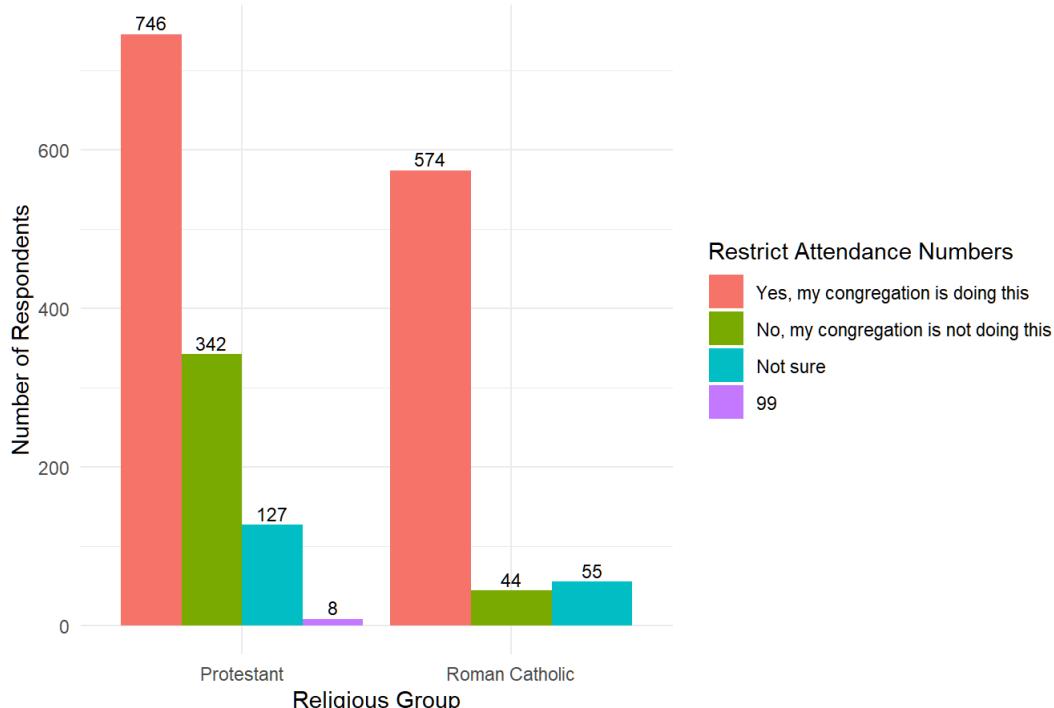
```
# CONGRESTRICT1_c_W70.
# Which of the following, if any, is the house of worship you attend most often CURRENTLY doing as a result
ggplot(w70_cp%>% filter(!is.na(CONGRESTRICT1_c_W70)), aes(x = factor(F_RELIG), fill = factor(CONGRESTRICT1
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
```

```

title = "Restrictions on Number of Attendees by Religion (July 2020)",
x = "Religious Group",
y = "Number of Respondents",
fill = "Restrict Attendance Numbers"
) +
scale_x_discrete(labels = c(
  "1" = "Protestant",
  "2" = "Roman Catholic"
)) +
scale_fill_discrete(labels = c(
  "1" = "Yes, my congregation is doing this",
  "2" = "No, my congregation is not doing this",
  "3" = "Not sure"
)) +
theme_minimal()

```

Restrictions on Number of Attendees by Religion (July 2020)



```

model_5 <- glm(ATTENDMONTH_bin ~ CONGRESTRICT1_c_W70,
                 data = w70_cp_clean,
                 family = binomial)
summary(model_5)

```

```

Call:
glm(formula = ATTENDMONTH_bin ~ CONGRESTRICT1_c_W70, family = binomial,
     data = w70_cp_clean)

Coefficients:

```

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-0.0139815	0.0477553	-0.293	0.770
CONGRESTRICT1_c_W70	-0.0004349	0.0072242	-0.060	0.952

(Dispersion parameter for binomial family taken to be 1)

```

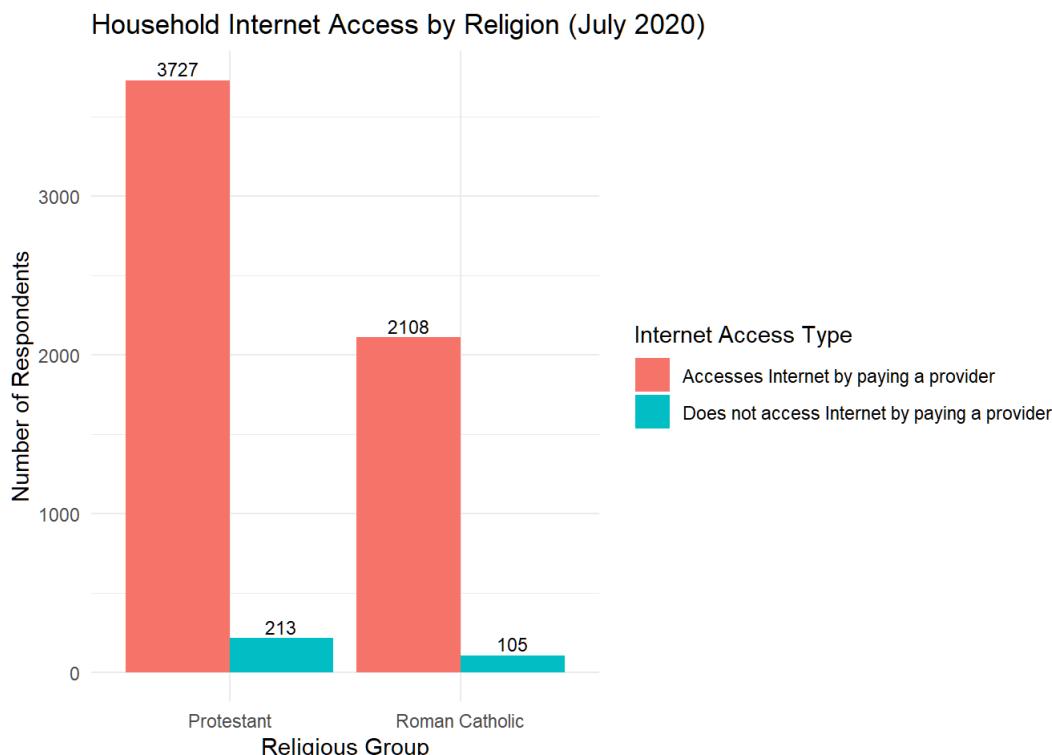
Null deviance: 2628.3 on 1895 degrees of freedom
Residual deviance: 2628.3 on 1894 degrees of freedom
(4257 observations deleted due to missingness)
AIC: 2632.3

```

Number of Fisher Scoring iterations: 3

People whose congregations did not restrict attendance numbers were significantly more likely to attend in-person religious services than those that did. Respondents who were unsure about such restrictions were less likely to attend.

```
# F_ACWEB
# Household internet status
ggplot(
  w70_cp %>% filter(!is.na(F_ACWEB)),
  aes(x = factor(F_RELIG), fill = factor(F_ACWEB))
) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Household Internet Access by Religion (July 2020)",
    x = "Religious Group",
    y = "Number of Respondents",
    fill = "Internet Access Type"
  ) +
  scale_x_discrete(labels = c(
    "1" = "Protestant",
    "2" = "Roman Catholic"
  )) +
  scale_fill_discrete(labels = c(
    "1" = "Accesses Internet by paying a provider",
    "2" = "Does not access Internet by paying a provider"
  )) +
  theme_minimal()
```



```
# 确保是字符型
w70_cp_clean$F_ACWEB <- as.character(w70_cp_clean$F_ACWEB)

model_6 <- glm(ATTENDMONTH_bin ~ F_ACWEB,
```

```
data = w70_cp_clean,
family = binomial)
summary(model_6)
```

```
Call:
glm(formula = ATTENDMONTH_bin ~ F_ACWEB, family = binomial,
     data = w70_cp_clean)

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -1.47770   0.03366 -43.901 <2e-16 ***
F_ACWEB2     0.15694   0.14157   1.109   0.268
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

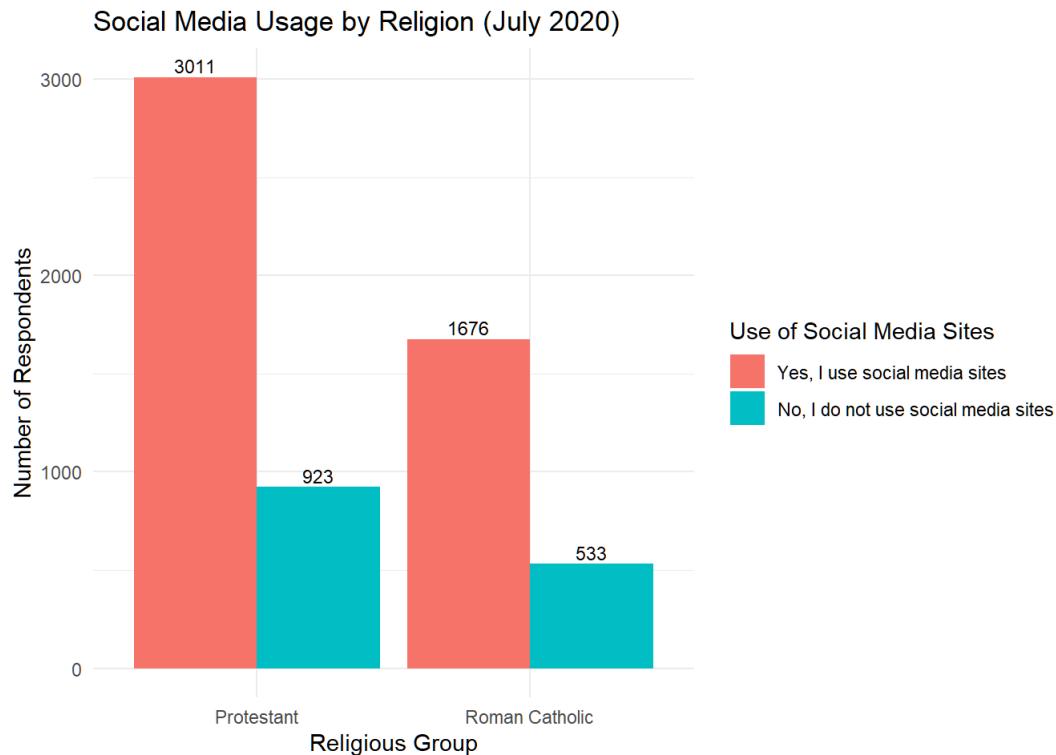
(Dispersion parameter for binomial family taken to be 1)
```

```
Null deviance: 5930.7 on 6152 degrees of freedom
Residual deviance: 5929.5 on 6151 degrees of freedom
AIC: 5933.5
```

Number of Fisher Scoring iterations: 4

There was no significant relationship between household internet access and in-person religious attendance. Whether respondents had internet access or not did not meaningfully affect their likelihood of attending services.

```
# SNSUSE_W70.
# Do you ever use social media sites like Facebook, Twitter or Instagram?
ggplot(
  w70_cp %>%
    filter(SNSUSE_W70 %in% c(1, 2)), # 去掉 Refused (99) 和 NA
    aes(x = factor(F_RELIG), fill = factor(SNSUSE_W70)))
) +
  geom_bar(position = "dodge") +
  geom_text(
    stat = "count",
    aes(label = after_stat(count)),
    position = position_dodge(width = 0.9),
    vjust = -0.3,
    size = 3
  ) +
  labs(
    title = "Social Media Usage by Religion (July 2020)",
    x = "Religious Group",
    y = "Number of Respondents",
    fill = "Use of Social Media Sites"
  ) +
  scale_x_discrete(labels = c(
    "1" = "Protestant",
    "2" = "Roman Catholic"
  )) +
  scale_fill_discrete(labels = c(
    "1" = "Yes, I use social media sites",
    "2" = "No, I do not use social media sites"
  )) +
  theme_minimal()
```



```
model_7 <- glm(ATTENDMONTH_bin ~ SNSUSE_W70,
                 data = w70_cp_clean,
                 family = binomial)
summary(model_7)
```

Call:
`glm(formula = ATTENDMONTH_bin ~ SNSUSE_W70, family = binomial,
 data = w70_cp_clean)`

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-1.461700	0.035313	-41.393	<2e-16 ***
SNSUSE_W70	-0.005479	0.009920	-0.552	0.581

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 5930.7 on 6152 degrees of freedom
 Residual deviance: 5930.4 on 6151 degrees of freedom
 AIC: 5934.4

Number of Fisher Scoring iterations: 4