Data Exploration: Gender and World View

Paddy Adams

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The data this week allowed us to explore the relationships between international conflict, democracy and women's rights. This comes from Barnhart et al's 2020 paper "The Suffragist Peace" and builds on the idea of democratic peace. The theory here is that women fundamentally favour peace and cooperation over conflict more than men do, and so as the suffrage movement grew at the start of the last century and developed, female representation in politics also grow. Given that across all modern nation states we have a broad spectrum of democracy/autocracy and women's civil liberty, when looking back over almost 100 years we have good data to analyze this theory. The key binary variables I have chosen to focus on are 'autocracy', 'suffrage' and 'nuclear', and the dependent variable on these factors is the number of conflicts initiated (with subsets as to whether or not conflict was initiated against a democracy or an autocracy).

To start with, the theory of democratic peace is the propensity for democracies to avoid conflict with each other. From this data set it is clear that this is the case, and even though conflict is actually fairly rare, autocracies are much more likely to initiate conflict:

```r
s_data %>%
  group_by(autocracy) %>%
  summarise(mean = mean(init))
```

```
## # A tibble: 2 x 2
##   autocracy  mean
##       <dbl> <dbl>
## 1         0 0.149
## 2         1 0.204
```

```r
s_data$autocracy <- as.factor(s_data$autocracy)

hist <- s_data %>%
  group_by(autocracy) %>%
  ggplot(., aes(x = year, y = init, fill = autocracy)) +
  geom_histogram(aes(y = ..density..), bins = 30) +
  theme_classic() +
  labs(title = "Disputes Initiated per Year",
       subtitle = "Autocracy: 1 = Yes, 0 = No",
       y = "Density",
       x = "Year")

point <- s_data %>%
  group_by(autocracy) %>%
  ggplot(., aes(x = year, y = init, colour = autocracy)) +
  geom_point() +
  theme_classic() +
```

```
labs(title = "Disputes Initiated per Year",
     subtitle = "Autocracy: 1 = Yes, 0 = No",
     y = "Count",
     x = "Year")
```

The role women's suffrage plays here is that it acts, for the most part, as a subset of democracy. This is due to suffrage movements not getting off the ground in autocracies. So if suffrage exists in a democracy then over time we would hope to see less conflict if we assume that women increasingly hold positions of power and bring their approach of avoiding violence. To analyze this here is a regression conductied on the data set:

```
s_data %>%
  lm(init ~ suffrage, .) %>%
  tidy(conf.int = T) %>%
  select(-c(p.value, std.error, statistic)) %>%
  mutate(term = c("Intercept", "Suffrage")) %>%
  gt() %>%
  tab_header(title = "Effect of Women's Suffrage on Initiating Conflict") %>%
  cols_label(term = "",
             estimate = "Coefficient",
             conf.low = "5th percentile",
             conf.high = "95th percentile") %>%
  tab_spanner(label = "Confidence Interval",
              columns = 3:4) %>%
  fmt_number(., columns = vars("estimate", "conf.low", "conf.high"), decimals = 3)
```

```
## Warning: 'columns = vars(...)' has been deprecated in gt 0.3.0:
## * please use 'columns = c(...)' instead
```

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```

Effect of Women's Suffrage on Initiating Conflict

| | Coefficient | Confidence Interval | |
		5th percentile	95th percentile
Intercept	0.205	0.188	0.221
Suffrage	-0.051	-0.077	-0.024

```
wci <- s_data %>%
  filter(init < 15 & init > 0) %>%
  ggplot(aes(x = wcivillibs, y = init)) +
  geom_jitter() +
  stat_smooth(method = "lm", se = FALSE)
```

For a unit increase in suffrage, there is a associated average decrease of 0.051 in likelihood of initiating conflict. This therefore helps prove the theory, even if the model is very simple. Another variable in the dataset is whether or not a country is a nuclear power. Nuclear powers have dominated global politics since nuclear weapons first came into existence, and so it would make sense that nuclear powers are also more likely to initiate conflicts.

```
s_data %>%
  lm(init ~ suffrage + nuclear, .) %>%
  tidy(conf.int = T) %>%
  select(-c(p.value, std.error, statistic)) %>%
  mutate(term = c("Intercept", "Suffrage", "Nuclear")) %>%
  gt() %>%
  tab_header(title = "Effect of Women's Suffrage and Nuclear Power on Initiating Conflict") %>%
  cols_label(term = "",
             estimate = "Coefficient",
             conf.low = "5th percentile",
             conf.high = "95th percentile") %>%
  tab_spanner(label = "Confidence Interval",
              columns = 3:4) %>%
  fmt_number(., columns = vars("estimate", "conf.low", "conf.high"), decimals = 3)
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```

Effect of Women's Suffrage and Nuclear Power on Initiating Conflict

| | Coefficient | Confidence Interval | |
		5th percentile	95th percentile
Intercept	0.198	0.182	0.215
Suffrage	−0.091	−0.117	−0.064
Nuclear	0.687	0.614	0.760

As can by seen by this slightly more complex regression, in reality the countries that hold nuclear power are far more likely to initiate conflict, and this variable is of far greater importance than women's suffrage. I thought it would be interesting to see if the original regression using just suffrage would change is I were to remove countries that were nuclear powers, such that the count for initiating conflict is hopefully more directly correlated to suffrage. Of course this has a few limitations, for example many rich and developed democracies have nuclear arms as a result of progression in time - and these are strongly linked to increasing women's civil freedom (and suffrage).

```
s_data %>%
  filter(nuclear == 0) %>%
  lm(init ~ suffrage, .) %>%
  tidy(conf.int = T) %>%
  select(-c(p.value, std.error, statistic)) %>%
  mutate(term = c("Intercept", "Suffrage")) %>%
  gt() %>%
  tab_header(title = "Effect of Women's Suffrage on Initiating Conflict") %>%
  cols_label(term = "",
             estimate = "Coefficient",
             conf.low = "5th percentile",
             conf.high = "95th percentile") %>%
  tab_spanner(label = "Confidence Interval",
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  fmt_number(., columns = vars("estimate", "conf.low", "conf.high"), decimals = 3)
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```

Effect of Women's Suffrage on Initiating Conflict

| | Coefficient | Confidence Interval | |
		5th percentile	95th percentile
Intercept	0.196	0.180	0.212
Suffrage	−0.085	−0.110	−0.060

As can be seen, there is slight increase in the effect suffrage plays in reducing the number of conflicts initiated.