NILC Analysis V1

Viola Glenn, viola.glenn@gmail.com

March 23, 2017

Goal: Create some preliminary viz to address potential for disproportionate impact based on religion. Uses country list from 2nd Executive Order. Also utilizes data compiled by Amanda Alvarez at https://data.world/gecky/20020101-20170321-rpc-refugees.

Step 1: Call Libraries

```
library(dplyr)
library(ggplot2)
library(readr)
library(tidyr)
library(scales)
library(pander)
```

Step 2: Load Data

I don't have access to data.world at my machine because of file sharing restrictions. Instead I've downloaded the data and will pull it from my files. Also dropping many blank (all NA) rows that are imported with the file.

```
RPC <- read_delim("C:/Users/vglenn/Documents/Misc/D4D/immigration-connect/RPC Vivek/Data/RPC_data.csv",
                        "\t", escape_double = FALSE, trim_ws = TRUE)
```

```
head(RPC)
```

```
## # A tibble: 6 x 4
##   Nationality CalendarYear Religion NumRefugees
##         <chr>        <int>    <chr>       <dbl>
## 1 Afghanistan         2002  Atheist           0
## 2 Afghanistan         2003  Atheist           0
## 3 Afghanistan         2004  Atheist           0
## 4 Afghanistan         2005  Atheist           0
## 5 Afghanistan         2006  Atheist           6
## 6 Afghanistan         2007  Atheist           0
```

```
RPC<-na.omit(RPC)
```

Step 3: Analysis Set-Up

I pass R countries impacted by ban and group religions. EO1 refers to first executive order (including Iraq), while EO2 refers to the more recent action.

(1) the list of countries impacted by the ban. Iraq is excluded as this focuses on the most recent version of the EO.

(2) A crosswalk linking each reported religion to a category: Christian, Moslem, Unknown, No Religion, Other, and Unknown. I made this crosswalk myself using Wikipedia, so am completely open to suggestions on making it more accurate.

```
banned_EO1 <-c ('Iran','Libya','Somalia','Sudan','Syria','Yemen', 'Iraq')
banned_EO2 <-c ('Iran','Libya','Somalia','Sudan','Syria','Yemen')

#Add banned flag to master dataset
RPC$banned_EO1 <- ifelse(RPC$Nationality %in% banned_EO1, "Banned", "Not Banned")
RPC$banned_EO2 <- ifelse(RPC$Nationality %in% banned_EO2, "Banned", "Not Banned")

#Create crosswalk
all_relig <- c('Christian', 'Moslem', 'Unknown', 'Catholic', 'No Religion', 'Protestant',
               'Pentecostalist', 'Moslem Suni', 'Evangelical Christian', 'Baptist',
               'Other Religion', 'Seventh Day Adventist', 'Jehovah Witness', 'Orthodox',
               'Atheist', 'Jewish', 'Buddhist', 'Methodist', 'Bahai', 'Lutheran',
               'Moslem Shiite', 'Hindu', 'Ancestral Worship', 'Animist',
               'Russian Orthodox', 'Coptic', 'Greek Orthodox', 'Mennonite', 'Chaldean',
               'Moslem Ismaici', 'Ukr Orthodox', 'Zoroastrian', 'Cao Dai',
               'Hare Krishna',"Kaaka'i", 'Kirat', 'Old Believer', 'Sabeans-Mandean',
               'Uniate', 'Yazidi', 'Ahmadiyya', 'Drew', 'Hoa Hao',
               'Ukrainian Autocephalous Orthodox',
               'Ukrainian Orthodox Kyivan Patriarchate')

big_categories <- c('Christian', 'Moslem', 'Unknown', 'Christian', 'No Religion',
                    'Christian', 'Christian', 'Moslem', 'Christian', 'Christian',
                    'Other', 'Christian', 'Christian', 'Christian', 'No Religion',
                    'Jewish', 'Other', 'Christian', 'Other', 'Christian', 'Moslem',
                    'Other', 'Other', 'Other', 'Christian', 'Christian', 'Christian',
                    'Christian', 'Christian', 'Moslem', 'Christian', 'Other', 'Other',
                    'Other', 'Other', 'Other', 'Other', 'Other', 'Christian',
                    'Other', 'Moslem', 'Other', 'Other', 'Christian', 'Christian')

lookup <- data.frame(all_relig, big_categories)

lookup <- arrange(lookup, big_categories)

pandoc.table(lookup, style = 'rmarkdown', border = 0, split.table = Inf)
```

```
##
##
## |              all_relig               |  big_categories  |
## |:------------------------------------:|:----------------:|
## |              Christian               |    Christian     |
## |               Catholic               |    Christian     |
## |              Protestant              |    Christian     |
## |            Pentecostalist            |    Christian     |
## |        Evangelical Christian         |    Christian     |
## |               Baptist                |    Christian     |
## |        Seventh Day Adventist         |    Christian     |
## |           Jehovah Witness            |    Christian     |
## |               Orthodox               |    Christian     |
## |              Methodist               |    Christian     |
## |               Lutheran               |    Christian     |
## |           Russian Orthodox           |    Christian     |
```

```
## |                 Coptic                 |    Christian     |
## |             Greek Orthodox             |    Christian     |
## |               Mennonite                |    Christian     |
## |                Chaldean                |    Christian     |
## |              Ukr Orthodox              |    Christian     |
## |                 Uniate                 |    Christian     |
## |    Ukrainian Autocephalous Orthodox    |    Christian     |
## | Ukrainian Orthodox Kyivan Patriarchate |    Christian     |
## |                 Jewish                 |      Jewish      |
## |                 Moslem                 |      Moslem      |
## |              Moslem Suni               |      Moslem      |
## |             Moslem Shiite              |      Moslem      |
## |             Moslem Ismaici             |      Moslem      |
## |               Ahmadiyya                |      Moslem      |
## |              No Religion               |   No Religion    |
## |                Atheist                 |   No Religion    |
## |             Other Religion             |      Other       |
## |                Buddhist                |      Other       |
## |                 Bahai                  |      Other       |
## |                 Hindu                  |      Other       |
## |           Ancestral Worship            |      Other       |
## |                Animist                 |      Other       |
## |               Zoroastrian              |      Other       |
## |                Cao Dai                 |      Other       |
## |              Hare Krishna              |      Other       |
## |                Kaaka'i                 |      Other       |
## |                 Kirat                  |      Other       |
## |              Old Believer              |      Other       |
## |            Sabeans-Mandean             |      Other       |
## |                 Yazidi                 |      Other       |
## |                  Drew                  |      Other       |
## |                Hoa Hao                 |      Other       |
## |                Unknown                 |     Unknown      |
```

```r
#Add religion categories to master dataset
RPC <- left_join(RPC, lookup, by=c('Religion'='all_relig'))

#Here's the distribution we're looking at:
table(RPC$big_categories)
```

```
##
##   Christian      Jewish      Moslem No Religion       Other     Unknown
##        7456         384        2144        1168        1744         992
```

Step 4: Some quick analysis

Summarise percentage of refugees that would have been historically impacted, by religion.

```r
#Sum by whether country is banned, year, and religion
summary <- RPC %>%
  group_by(banned_EO1, CalendarYear, big_categories) %>%
  summarise(refugees = sum(NumRefugees))

#Reformat for easier work
```

```r
summary <- spread(summary, banned_EO1, refugees)

#Create percentage banned variable
summary$percentage_banned_eo1 <- summary$Banned/(summary$`Not Banned`+summary$Banned)

#A glimpse of where we stand now
head(summary)
```

```
## Source: local data frame [6 x 5]
## Groups: CalendarYear [1]
##
##   CalendarYear big_categories Banned Not Banned percentage_banned_eo1
##          <int>         <fctr>  <dbl>      <dbl>                 <dbl>
## 1         2002      Christian   1442      13884           0.094088477
## 2         2002         Jewish    373       2061           0.153245686
## 3         2002         Moslem   1018       5873           0.147728922
## 4         2002    No Religion      7       1442           0.004830918
## 5         2002          Other    289        132           0.686460808
## 6         2002        Unknown      5       3198           0.001561037
```

```r
#Same as above, but for EO2

#Sum by whether country is banned, year, and religion
summary2 <- RPC %>%
  group_by(banned_EO2, CalendarYear, big_categories) %>%
  summarise(refugees = sum(NumRefugees))

#Reformat for easier work
summary2 <- spread(summary2, banned_EO2, refugees)

#Create percentage banned variable
summary2$percentage_banned_eo2 <- summary2$Banned/(summary2$`Not Banned`+summary2$Banned)

#Save output for EO1
summary <- left_join(summary, summary2, by=c('CalendarYear', 'big_categories'))
```

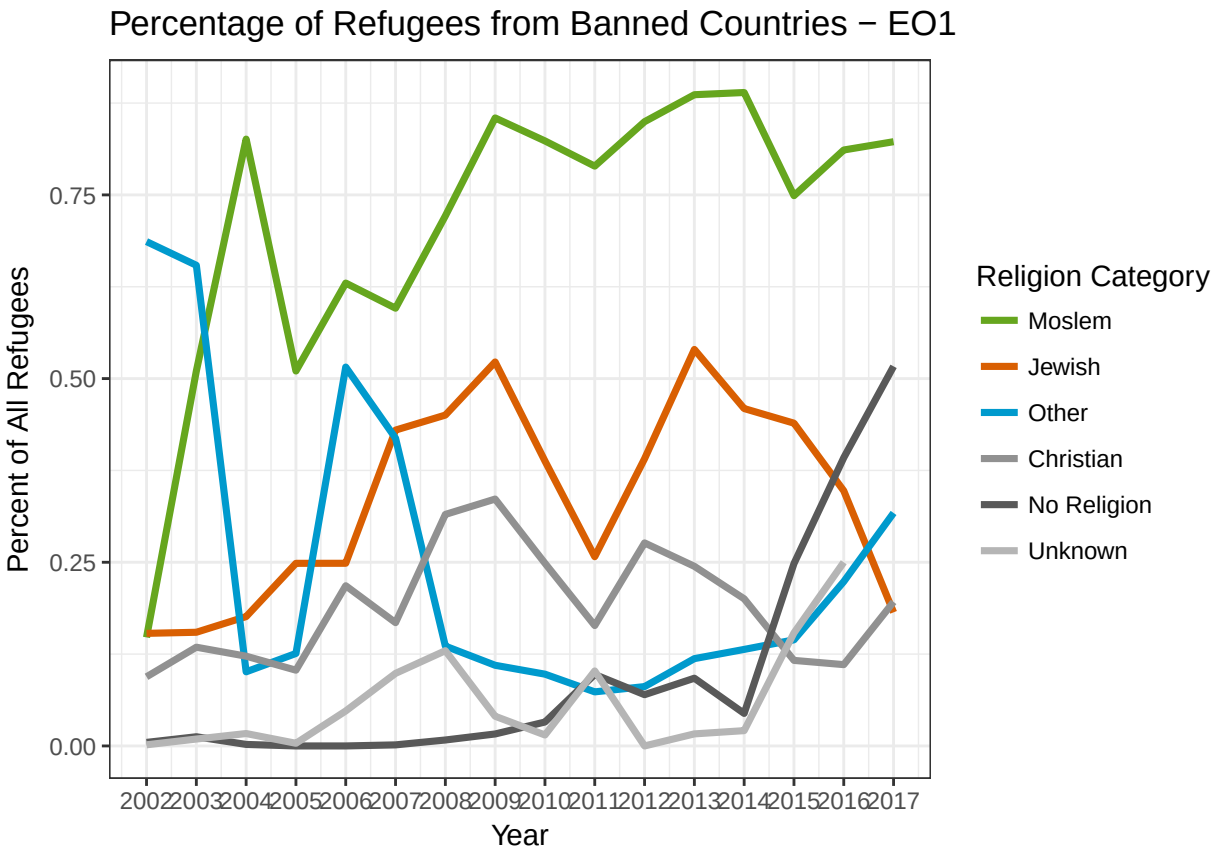
Step 5: Viz

Create final viz to highlight refugee nationalities overtime as they relate to the EO.

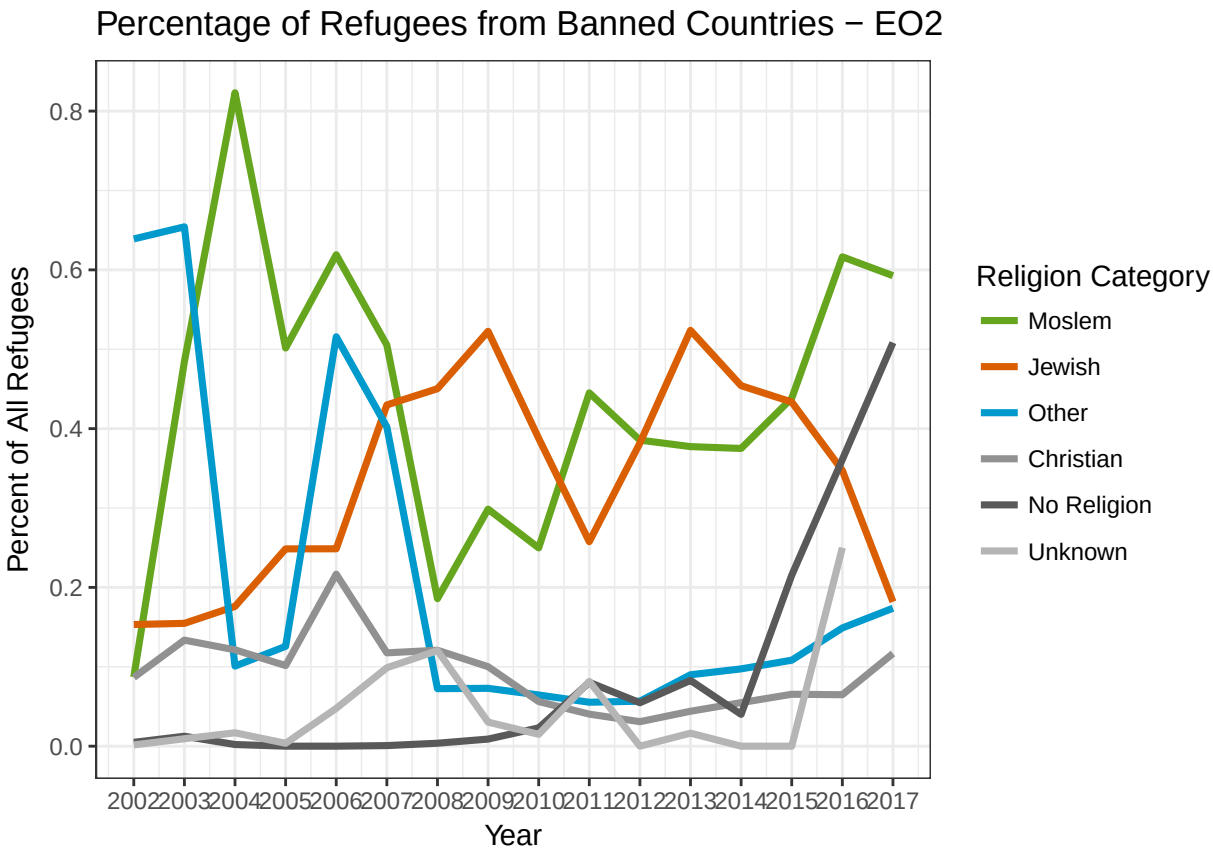
See By Origin and Religion.xlxs for underlying data table.

```r
#Order my levels as I'd like them displayed
levels <- c('Moslem', 'Jewish', 'Other', 'Christian', 'No Religion', 'Unknown')
summary$big_categories <- as.character(summary$big_categories)
summary$big_categories <- factor(summary$big_categories, levels = levels)

#Assign colors to levels to highlight areas of bigger impact
colors <- c("#66A61E", '#D95F02', 'deepskyblue3', 'gray57','gray35' , 'gray71')
names(colors) <- levels(as.factor(summary$big_categories))

#Plot EO1
ggplot(data = summary, aes(x = CalendarYear, y = percentage_banned_eo1,
```

```
                          color = as.factor(big_categories))) +
  geom_line(size = 1.25) +
  scale_color_manual(name = "Religion Category", values=colors) +
  scale_x_continuous(breaks = 2002:2017) +
  scale_y_continuous(labels = comma) +
  labs(x = "Year", y = "Percent of All Refugees",
       title = "Percentage of Refugees from Banned Countries - EO1") +
  theme(axis.text = element_text(size = 12),
        axis.title = element_text(size = 14,face = "bold")) +
  theme_bw()
```




```
#Plot EO2
ggplot(data = summary, aes(x = CalendarYear, y = percentage_banned_eo2,
                          color = as.factor(big_categories))) +
  geom_line(size = 1.25) +
  scale_color_manual(name = "Religion Category", values=colors) +
  scale_x_continuous(breaks = 2002:2017) +
  scale_y_continuous(labels = comma) +
  labs(x = "Year", y = "Percent of All Refugees",
       title = "Percentage of Refugees from Banned Countries - EO2") +
  theme(axis.text = element_text(size = 12),
        axis.title = element_text(size = 14,face = "bold")) +
  theme_bw()
```



Step 6: Adhoc Analysis 4/5/17 Re: Memo from Angelo Mathay

Create the hypothetical table as requested.

See Requested Table.xlxs for full table.

```
#Part A: Count of refugees by Moslem denomination
by_denom <- RPC %>%
  filter(big_categories=='Moslem' & banned_EO1=='Banned') %>%
  #Keep only Moslem denominations and Iraq, Iran, Libya, Sudan, Somalia, Syria, Yemen
  group_by(CalendarYear, Religion) %>%
  summarise(count=sum(NumRefugees)) #Create sum of by year and religion

by_denom <- spread(by_denom, Religion, count)

#Part B: Find the top religion (by refugee count) and top non-Moslem religion for each year and banned
top_religion_all_banned_ex_moslem <- RPC %>%
  filter(banned_EO1=='Banned' & big_categories!='Moslem') %>%
  group_by(CalendarYear, Religion) %>%
  summarise(count = sum(NumRefugees)) %>%
  arrange(CalendarYear, -count) %>%  #Order from largest group to smallest, within year
  summarise(Religion = first(Religion),
            Count = first(count)) %>%
  mutate(Largest_Ex_Mos = paste(Religion, '(', Count, ')')) %>%
  select(-Religion, -Count)
```

```
top_religion_all_banned <- RPC %>%
  filter(banned_EO1=='Banned') %>% #Does NOT exclude Moslem this time
  group_by(CalendarYear, Religion) %>%
  summarise(count = sum(NumRefugees)) %>%
  arrange(CalendarYear, -count) %>% #Order from largest group to smallest, within year
  summarise(Religion = first(Religion),
            Count = first(count)) %>%
  mutate(Largest = paste(Religion, '(', Count, ')'))%>%
  select(-Religion, -Count)


#Part C: Combine for final table
output <- left_join(by_denom, top_religion_all_banned, by='CalendarYear')
output <- left_join(output, top_religion_all_banned_ex_moslem, by='CalendarYear')
```