Library

```
pacman::p_load(stm,
               dplyr,
               quanteda)
```

Ingest

Since the speecehs are saved as individual .txt files, I use the `quanteda` approach to import the text. Output: `corpus_1`, raw text files with unordered covariate metadata.

Citation: Mikhaylov, Slava; Baturo, Alexander; Dasandi, Niheer, 2017, "United Nations General Debate Corpus", doi:10.7910/DVN/0TJX8Y, Harvard Dataverse, V3

```
# Read using Quanteda ----
corpus_1 <- readtext::readtext("/Users/ScottPatterson/OneDrive - McGill University/patterso
```

Pre-processing

This step removes stop words, numbers, punctuation, stems the words, converts everything to lowercase. Use the `textProcessor` function. Output: corpus_2

```
# Specify metadata from corpus ----
corpus_1_meta <- data.frame(corpus_1[,c(1,3:5)])

# textProcessor ----
corpus_2 <- textProcessor(documents = corpus_1$text,metadata = corpus_1_meta)
```

```
## Building corpus...
## Converting to Lower Case...
## Removing punctuation...
## Removing stopwords...
## Removing numbers...
## Stemming...
## Creating Output...
```

Remove Infrequent Words

`plotRemoved` Removing infrequently used words. This function will allow us to see how many words would be removed at different threshholds.

```
# plotRemoved: test different thresholds for infrequent word removal ----

plotRemoved(corpus_2$documents, lower.thresh = seq(1,200, by = 25))
```

None of the documents are dropped at the 200 word threshhold. I can try to specify different models at different levels of sensitivity. The sharpest acceleration occurs between 0 - 25, gradually tapering off around 50 and eventually flattening out.

Removing too many words may exclude important but infrequently appearing key words. Removing too few words will XXXX

Start with a lower threshold, later specifications at higher thresholds.

prepDocuments lower.thresh = 15 Output: corpus_3

```
#prepDocuments ----


corpus_3 <- prepDocuments(corpus_2$documents, corpus_2$vocab, corpus_2$meta, lower.thresh =

## Removing 41189 of 50938 terms (101505 of 5169003 tokens) due to frequency
## Your corpus now has 7507 documents, 9749 terms and 5067498 tokens.
```

COVARIATES

P5 = USA, FRA, CHN, GBR, RUS -The authors of the dataset code Soviet Union as Russia

```
# P5 ----
corpus_4 <- mutate(corpus_1, P5 = ifelse(docvar1 == "FRA", 1,
                                    ifelse(docvar1 == "USA", 1,
                                        ifelse(docvar1 == "GBR",1,
                                            ifelse(docvar1 == "CHN",1,
                                                ifelse(docvar1 == "RUS",1,0)))
```

Nuclear Weapon States: NWS P5 India (1974) Pakistan (1998) North Korea (2006) Israel (unknown; 1966)

```
#NWS
corpus_4$NWS <- NA
corpus_4 <- corpus_4 %>%
  mutate(
    NWS = case_when(
      P5 == 1 ~ 1,
      docvar1 == "IND" & docvar3 > 1973 ~ 1,
      docvar1 == "PAK" & docvar3 > 1997 ~ 1,
      docvar1 == "PRK" & docvar3 > 2005 ~ 1,
      docvar1 == "ISR" & docvar3 > 1965 ~ 1,
      is.na(NWS) ~ 0
    )
  )
```

ECOWAS: https://en.wikipedia.org/wiki/Treaty_of_Lagos

```r
# ECOWAS
corpus_4$ECOWAS <- NA
corpus_4 <- corpus_4 %>%
  mutate(
    ECOWAS = case_when(
      docvar1 == "BEN" & docvar3 > 1974 ~ 1,
        docvar1 == "BFA" & docvar3 > 1974 ~ 1,
        docvar1 == "CPV" & docvar3 > 1974 ~ 1,
        docvar1 == "GMB" & docvar3 > 1974 ~ 1,
        docvar1 == "GHA" & docvar3 > 1974 ~ 1,
        docvar1 == "GNB" & docvar3 > 1974 ~ 1,
        docvar1 == "LBR" & docvar3 > 1974 ~ 1,
        docvar1 == "MLI" & docvar3 > 1974 ~ 1,
        docvar1 == "WAN" & docvar3 > 1974 ~ 1,
        docvar1 == "SEN" & docvar3 > 1974 ~ 1,
        docvar1 == "SLE" & docvar3 > 1974 ~ 1,
        docvar1 == "TGO" & docvar3 > 1974 ~ 1,
        docvar1 == "GIN" & docvar3 > 1974 & docvar3 < 2009 ~ 1,
        docvar1 == "NER" & docvar3 > 1974 & docvar3 < 2010 ~ 1,
        docvar1 == "CIV" & docvar3 > 1974 & docvar3 < 2011 ~ 1,
        is.na(ECOWAS) ~ 0
    )
  )
```

EU: Maastricht 1993

```r
#  ----
corpus_4$EU <-NA
corpus_4 <- corpus_4 %>%
  mutate(
    EU = case_when(
      docvar1 == "BEL" & docvar3 > 1970 ~ 1,
      docvar1 == "ITA" & docvar3 > 1970 ~ 1,
      docvar1 == "LUX" & docvar3 > 1970 ~ 1,
      docvar1 == "FRA" & docvar3 > 1970 ~ 1,
      docvar1 == "NLD" & docvar3 > 1970 ~ 1,
      docvar1 == "DEU" & docvar3 > 1970 ~ 1,
      docvar1 == "DNK" & docvar3 > 1972 ~ 1,
      docvar1 == "IRL" & docvar3 > 1972 ~ 1,
      docvar1 == "GBR" & docvar3 > 1972 ~ 1,
      docvar1 == "GRC" & docvar3 > 1981 ~ 1,
      docvar1 == "PRT" & docvar3 > 1985 ~ 1,
      docvar1 == "ESP" & docvar3 > 1985 ~ 1,
      docvar1 == "AUT" & docvar3 > 1994 ~ 1,
      docvar1 == "FIN" & docvar3 > 1994 ~ 1,
      docvar1 == "SWE" & docvar3 > 1994 ~ 1,
      docvar1 == "CYP" & docvar3 > 2003 ~ 1,
```

```r
        docvar1 == "CZE" & docvar3 > 2003 ~ 1,
        docvar1 == "EST" & docvar3 > 2003 ~ 1,
        docvar1 == "HUN" & docvar3 > 2003 ~ 1,
        docvar1 == "LVA" & docvar3 > 2003 ~ 1,
        docvar1 == "LTU" & docvar3 > 2003 ~ 1,
        docvar1 == "MLT" & docvar3 > 2003 ~ 1,
        docvar1 == "POL" & docvar3 > 2003 ~ 1,
        docvar1 == "SVK" & docvar3 > 2003 ~ 1,
        docvar1 == "SVN" & docvar3 > 2003 ~ 1,
        docvar1 == "BGR" & docvar3 > 2006 ~ 1,
        docvar1 == "ROU" & docvar3 > 2006 ~ 1,
        docvar1 == "HRV" & docvar3 > 2012 ~ 1,
        is.na(EU) ~ 0))

#corpus_4 <- corpus_4 %>%
#  mutate(EU = case_when(is.na(EU) ~ 0))
```

CTBT: https://en.wikipedia.org/wiki/List_of_parties_to_the_Comprehensive_
Nuclear-Test-Ban_Treaty

Preliminary Models

```r
corpus_5 <- corpus_4

# corpus_5 meta ----
corpus_5_meta <- data.frame(corpus_5[,c(1,3:6)])

# corpus_5 textProcessor ----
corpus_5_pro <- textProcessor(documents = corpus_5$text,metadata = corpus_5_meta)

## Building corpus...
## Converting to Lower Case...
## Removing punctuation...
## Removing stopwords...
## Removing numbers...
## Stemming...
## Creating Output...

# corpus_5 @ 5tokens prepDocuments ----
corpus_5_prep <- prepDocuments(corpus_5_pro$documents, corpus_5_pro$vocab, corpus_5_pro$meta

## Removing 36463 of 50938 terms (57434 of 5169003 tokens) due to frequency
## Your corpus now has 7507 documents, 14475 terms and 5111569 tokens.

# Estimate STM ----

prev_1 <- stm(documents = corpus_5_prep$documents,
```

```
                vocab = corpus_5_prep$vocab,
                K = 18,
                prevalence = ~P5,
                data = corpus_5_prep$meta,
                init.type = "Spectral")
## Beginning Spectral Initialization
##    Calculating the gram matrix...
##    Using only 10000 most frequent terms during initialization...
##    Finding anchor words...
##        ................
##    Recovering initialization...
##        ...................................................................................
## Initialization complete.
##    .......................................................................................
## Completed E-Step (24 seconds).
## Completed M-Step.
## Completing Iteration 1 (approx. per word bound = -7.280)
##    .......................................................................................
## Completed E-Step (20 seconds).
## Completed M-Step.
## Completing Iteration 2 (approx. per word bound = -7.210, relative change = 9.527e-03)
##    .......................................................................................
## Completed E-Step (18 seconds).
## Completed M-Step.
## Completing Iteration 3 (approx. per word bound = -7.196, relative change = 1.968e-03)
##    .......................................................................................
## Completed E-Step (21 seconds).
## Completed M-Step.
## Completing Iteration 4 (approx. per word bound = -7.190, relative change = 9.001e-04)
##    .......................................................................................
## Completed E-Step (17 seconds).
## Completed M-Step.
## Completing Iteration 5 (approx. per word bound = -7.186, relative change = 5.180e-04)
## Topic 1: state, peac, intern, unit, nation
##  Topic 2: develop, nation, unit, countri, global
##  Topic 3: peopl, countri, state, unit, nation
##  Topic 4: nation, unit, will, world, state
##  Topic 5: nation, unit, human, intern, right
##  Topic 6: intern, secur, peac, countri, nation
##  Topic 7: countri, nation, intern, peac, develop
##  Topic 8: intern, nation, peac, israel, unit
##  Topic 9: countri, develop, intern, nation, africa
##  Topic 10: nation, unit, develop, world, intern
##  Topic 11: intern, nation, unit, will, countri
##  Topic 12: world, nation, peopl, will, must
```

```
##  Topic 13: countri, intern, develop, nation, econom
##  Topic 14: nation, countri, will, state, peopl
##  Topic 15: nation, peac, unit, develop, intern
##  Topic 16: intern, nation, unit, develop, secur
##  Topic 17: nation, world, will, develop, countri
##  Topic 18: will, world, nuclear, can, countri
## ................................................................................
## Completed E-Step (18 seconds).
## Completed M-Step.
## Completing Iteration 6 (approx. per word bound = -7.184, relative change = 3.325e-04)
## ................................................................................
## Completed E-Step (19 seconds).
## Completed M-Step.
## Completing Iteration 7 (approx. per word bound = -7.182, relative change = 2.339e-04)
## ................................................................................
## Completed E-Step (18 seconds).
## Completed M-Step.
## Completing Iteration 8 (approx. per word bound = -7.181, relative change = 1.744e-04)
## ................................................................................
## Completed E-Step (15 seconds).
## Completed M-Step.
## Completing Iteration 9 (approx. per word bound = -7.180, relative change = 1.360e-04)
## ................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 10 (approx. per word bound = -7.179, relative change = 1.094e-04)
## Topic 1: state, peac, intern, unit, nation
##  Topic 2: develop, nation, countri, unit, global
##  Topic 3: peopl, countri, unit, state, nation
##  Topic 4: nation, unit, state, world, will
##  Topic 5: nation, unit, human, right, intern
##  Topic 6: intern, secur, peac, countri, state
##  Topic 7: countri, intern, peac, develop, nation
##  Topic 8: israel, peac, intern, nation, unit
##  Topic 9: countri, develop, intern, africa, nation
##  Topic 10: nation, unit, develop, world, intern
##  Topic 11: intern, will, unit, nation, countri
##  Topic 12: peopl, world, will, nation, must
##  Topic 13: countri, intern, develop, econom, nation
##  Topic 14: nation, countri, unit, state, will
##  Topic 15: nation, peac, develop, unit, africa
##  Topic 16: intern, nation, unit, develop, secur
##  Topic 17: world, nation, develop, intern, will
##  Topic 18: will, can, world, year, nuclear
## ................................................................................
## Completed E-Step (13 seconds).
```

```
## Completed M-Step.
## Completing Iteration 11 (approx. per word bound = -7.178, relative change = 8.897e-05)
## ....................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 12 (approx. per word bound = -7.178, relative change = 7.475e-05)
## ....................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 13 (approx. per word bound = -7.177, relative change = 6.527e-05)
## ....................................................................................
## Completed E-Step (22 seconds).
## Completed M-Step.
## Completing Iteration 14 (approx. per word bound = -7.177, relative change = 5.979e-05)
## ....................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 15 (approx. per word bound = -7.176, relative change = 5.253e-05)
## Topic 1: state, peac, intern, unit, peopl
##  Topic 2: develop, nation, countri, unit, global
##  Topic 3: peopl, countri, unit, state, struggl
##  Topic 4: nation, unit, state, world, intern
##  Topic 5: nation, unit, human, intern, secur
##  Topic 6: intern, secur, peac, countri, state
##  Topic 7: countri, intern, peac, develop, african
##  Topic 8: israel, peac, nation, intern, arab
##  Topic 9: countri, intern, develop, africa, south
##  Topic 10: nation, unit, develop, peac, countri
##  Topic 11: intern, will, unit, nation, peac
##  Topic 12: peopl, world, will, nation, must
##  Topic 13: countri, intern, develop, econom, peac
##  Topic 14: nation, countri, unit, state, will
##  Topic 15: nation, peac, develop, africa, countri
##  Topic 16: intern, nation, unit, develop, secur
##  Topic 17: world, develop, nation, intern, countri
##  Topic 18: will, can, world, year, one
## ....................................................................................
## Completed E-Step (14 seconds).
## Completed M-Step.
## Completing Iteration 16 (approx. per word bound = -7.176, relative change = 4.463e-05)
## ....................................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 17 (approx. per word bound = -7.176, relative change = 3.979e-05)
## ....................................................................................
## Completed E-Step (12 seconds).
```

```
## Completed M-Step.
## Completing Iteration 18 (approx. per word bound = -7.176, relative change = 3.619e-05)
## ...............................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 19 (approx. per word bound = -7.175, relative change = 3.335e-05)
## ...............................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 20 (approx. per word bound = -7.175, relative change = 3.053e-05)
## Topic 1: state, peac, unit, intern, nuclear
##  Topic 2: develop, nation, countri, unit, state
##  Topic 3: peopl, countri, unit, struggl, state
##  Topic 4: nation, unit, state, intern, world
##  Topic 5: unit, nation, human, secur, intern
##  Topic 6: intern, secur, peac, countri, state
##  Topic 7: countri, peac, intern, african, develop
##  Topic 8: israel, peac, nation, intern, state
##  Topic 9: countri, intern, develop, africa, south
##  Topic 10: nation, develop, unit, peac, countri
##  Topic 11: will, intern, unit, peac, communiti
##  Topic 12: peopl, world, will, nation, must
##  Topic 13: countri, intern, develop, peac, govern
##  Topic 14: nation, unit, countri, state, will
##  Topic 15: nation, develop, peac, africa, countri
##  Topic 16: intern, nation, unit, develop, countri
##  Topic 17: world, develop, intern, nation, countri
##  Topic 18: will, can, world, one, year
## ...............................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 21 (approx. per word bound = -7.175, relative change = 2.771e-05)
## ...............................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 22 (approx. per word bound = -7.175, relative change = 2.591e-05)
## ...............................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 23 (approx. per word bound = -7.175, relative change = 2.391e-05)
## ...............................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 24 (approx. per word bound = -7.174, relative change = 2.226e-05)
## ...............................................................................
## Completed E-Step (12 seconds).
```

```
## Completed M-Step.
## Completing Iteration 25 (approx. per word bound = -7.174, relative change = 2.044e-05)
## Topic 1: state, peac, unit, intern, nuclear
##  Topic 2: develop, nation, countri, state, global
##  Topic 3: peopl, countri, unit, struggl, state
##  Topic 4: nation, unit, state, intern, europ
##  Topic 5: unit, nation, secur, intern, human
##  Topic 6: intern, secur, peac, state, countri
##  Topic 7: countri, peac, intern, african, develop
##  Topic 8: israel, peac, nation, intern, state
##  Topic 9: countri, intern, develop, africa, south
##  Topic 10: nation, develop, unit, countri, peac
##  Topic 11: will, intern, unit, peac, communiti
##  Topic 12: peopl, world, will, nation, must
##  Topic 13: countri, intern, peac, govern, develop
##  Topic 14: nation, unit, countri, state, will
##  Topic 15: nation, develop, peac, africa, countri
##  Topic 16: intern, nation, develop, unit, countri
##  Topic 17: world, develop, intern, nation, countri
##  Topic 18: will, can, world, one, year
## ..................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 26 (approx. per word bound = -7.174, relative change = 1.918e-05)
## ..................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 27 (approx. per word bound = -7.174, relative change = 1.752e-05)
## ..................................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 28 (approx. per word bound = -7.174, relative change = 1.697e-05)
## ..................................................................................
## Completed E-Step (12 seconds).
## Completed M-Step.
## Completing Iteration 29 (approx. per word bound = -7.174, relative change = 1.559e-05)
## ..................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 30 (approx. per word bound = -7.174, relative change = 1.419e-05)
## Topic 1: state, peac, unit, intern, nuclear
##  Topic 2: develop, nation, countri, state, global
##  Topic 3: peopl, countri, unit, struggl, state
##  Topic 4: nation, unit, state, intern, right
##  Topic 5: unit, nation, secur, intern, human
##  Topic 6: intern, secur, peac, state, countri
```

```
##  Topic 7: countri, peac, intern, african, develop
##  Topic 8: israel, peac, nation, state, intern
##  Topic 9: countri, intern, africa, develop, south
##  Topic 10: nation, develop, unit, countri, peac
##  Topic 11: will, intern, unit, peac, communiti
##  Topic 12: peopl, world, will, nation, human
##  Topic 13: countri, intern, govern, peac, america
##  Topic 14: nation, unit, will, state, countri
##  Topic 15: nation, develop, peac, africa, countri
##  Topic 16: intern, nation, develop, unit, countri
##  Topic 17: world, develop, intern, nation, countri
##  Topic 18: will, can, world, one, unit
## ...........................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 31 (approx. per word bound = -7.174, relative change = 1.376e-05)
## ...........................................................................................
## Completed E-Step (15 seconds).
## Completed M-Step.
## Completing Iteration 32 (approx. per word bound = -7.173, relative change = 1.268e-05)
## ...........................................................................................
## Completed E-Step (15 seconds).
## Completed M-Step.
## Completing Iteration 33 (approx. per word bound = -7.173, relative change = 1.163e-05)
## ...........................................................................................
## Completed E-Step (13 seconds).
## Completed M-Step.
## Completing Iteration 34 (approx. per word bound = -7.173, relative change = 1.124e-05)
## ...........................................................................................
## Completed E-Step (14 seconds).
## Completed M-Step.
## Completing Iteration 35 (approx. per word bound = -7.173, relative change = 1.050e-05)
## Topic 1: state, peac, unit, intern, nuclear
##  Topic 2: develop, nation, countri, state, island
##  Topic 3: peopl, countri, unit, struggl, state
##  Topic 4: nation, unit, state, intern, right
##  Topic 5: unit, nation, secur, intern, human
##  Topic 6: intern, peac, secur, state, countri
##  Topic 7: countri, peac, intern, african, develop
##  Topic 8: israel, peac, nation, state, unit
##  Topic 9: countri, intern, africa, develop, south
##  Topic 10: nation, develop, unit, countri, peac
##  Topic 11: will, unit, intern, peac, communiti
##  Topic 12: peopl, world, will, nation, human
##  Topic 13: countri, intern, govern, peac, state
##  Topic 14: nation, unit, will, state, countri
```

```
##  Topic 15: nation, develop, peac, africa, countri
##  Topic 16: intern, nation, develop, unit, countri
##  Topic 17: world, develop, intern, countri, nation
##  Topic 18: will, world, can, one, countri
##  ...................................................................
## Completed E-Step (17 seconds).
## Completed M-Step.
## Model Converged
```

Preliminary Analysis

```
# Base topic names ----
topicNames_18 <-c("Topic 1", "Topic 2", "Topic 3", "Topic 4", "Topic 5", "Topic 6", "Topic 7
```

Label Topics

- Go back through and filter out country names

- The words are displayed according to 4 metrics. Each represents a different
  mathematical weighting scheme for assigning words to topics

- Highest Prob: word frequency

- FREX: word frequency weigted w/ topic exclusivity

- LIFT: another form of weighting; gives higher probability to words that
  don't appear in other topics

- SCORE: similar to LIFT, but on log scale

```
labelTopics(prev_1, n = 20)
```

```
## Topic 1 Top Words:
##      Highest Prob: state, peac, unit, nuclear, intern, nation, peopl, countri, republ, w
##      FREX: soviet, german, socialist, nuclear, detent, prohibit, disarma, outer, race, s
##      Lift: ssr, anti-hitl, ceausescu, erich, forward-bas, honeck, husak, ilyich, jaruzel
##      Score: soviet, co-oper, nuclear, ssr, mongolian, detent, socialist, romania, disarm
## Topic 2 Top Words:
##      Highest Prob: develop, nation, countri, state, island, global, unit, small, climat,
##      FREX: barbado, tobago, fiji, sid, papua, trinidad, bahama, island, solomon, pacif,
##      Lift: acidif, aosi, banana-produc, carbon-neg, fiji', honiara, mangrov, marshalles,
##      Score: barbado, sid, mdgs, island, tobago, bahama, fiji, trinidad, papua, pacif, ca
## Topic 3 Top Words:
##      Highest Prob: peopl, countri, unit, struggl, state, independ, nation, world, aggres
##      FREX: imperi, imperialist, viet, nam, vietnames, revolutionari, lao, kampuchea, rea
##      Lift: hoxha, anti-imperi, battambang, enver, glorieus, imperialist-zionist, kerekou
##      Score: imperialist, viet, kampuchea, imperi, nam, vietnames, lao, peopl, zionist, r
## Topic 4 Top Words:
```

11

```
##        Highest Prob: nation, unit, state, intern, will, right, new, europ, cooper, europea
##        FREX: bosnia, herzegovina, croatia, latvia, forty-eighth, yugoslavia, estonia, geor
##        Lift: metohija, abkhaz, non-albanian, ossetian, post-communist, republika, riga, se
##        Score: bosnia, herzegovina, croatia, kosovo, albania, latvia, serbia, forty-eighth,
## Topic 5 Top Words:
##        Highest Prob: unit, nation, secur, intern, human, must, right, council, organ, deve
##        FREX: peacekeep, court, reform, oper, prolifer, canada, statut, non-prolifer, coun
##        Lift: luxembourg', ahern, berti, monaco', rainier, todayâ, olara, people-smuggl, be
##        Score: peacekeep, millennium, unit, reform, nation, human, council, global, marino,
## Topic 6 Top Words:
##        Highest Prob: intern, peac, secur, state, countri, region, peopl, nation, develop,
##        FREX: yemen, kuwait, iraqi, morocco, libya, iraq, tunisia, emir, libyan, syrian, ba
##        Lift: abdrabuh, abidin, al-jab, alija, arab-islam, emirates', emirati, hamad, manso
##        Score: arab, yemen, kuwait, emir, iraqi, morocco, libyan, iraq, sudan, syrian, tuni
## Topic 7 Top Words:
##        Highest Prob: countri, peac, intern, african, develop, peopl, africa, will, organ,
##        FREX: chad, niger, mali, burundi, seneg, togo, gabon, rwanda, guinea, equatori, ben
##        Lift: abdoulay, ange-félix, anjouan, bata, benin', biya, bozizé, cameroon', compaor
##        Score: chad, burundi, niger, benin, mali, african, togo, guinea, rwanda, burkina, z
## Topic 8 Top Words:
##        Highest Prob: israel, peac, nation, state, unit, arab, intern, palestinian, peopl,
##        FREX: israel, lebanon, lebanes, iran, zionist, isra, iranian, jerusalem, palestin,
##        Lift: aqsa, judaea, kafr, mosh, samaria, yasin, dayan, irgun, khomeini, judea, euph
##        Score: zionist, arab, israel, islam, lebanon, lebanes, palestinian, iran, isra, ira
## Topic 9 Top Words:
##        Highest Prob: countri, intern, africa, develop, south, econom, nation, peopl, peac,
##        FREX: namibia, apartheid, namibian, pretoria, south, racist, zimbabw, black, swapo,
##        Lift: self-extinct, -payment, jayewarden, administrator-gener, tricamer, pac, sobhu
##        Score: co-oper, namibia, racist, africa, kampuchea, namibian, apartheid, swapo, pre
## Topic 10 Top Words:
##        Highest Prob: nation, develop, unit, countri, peac, world, will, intern, econom, re
##        FREX: japan, india, asean, pakistan, nepal, thailand, bangladesh, myanmar, sri, ind
##        Lift: arf, unv, nepales, uncdf, yasushi, suharto, akashi, wangchuck, cambodia', tae
##        Score: nepal, thailand, asean, myanmar, japan, pakistan, develop, australia, sri, c
## Topic 11 Top Words:
##        Highest Prob: will, unit, intern, peac, communiti, govern, negoti, effort, problem,
##        FREX: cyprus, ireland, turkey, malta, turkish, spain, mediterranean, greec, cypriot
##        Lift: austro-italian, ellemann-jensen, famagusta, turkish-cypriot, cyprus', denktas
##        Score: co-oper, cyprus, turkish, ireland, turkey, greec, cypriot, malta, greek, eur
## Topic 12 Top Words:
##        Highest Prob: peopl, world, will, nation, human, must, peac, can, terror, live, rig
##        FREX: terrorist, extremist, humankind, god, children, dream, taliban, apv, school,
##        Lift: tahrir, hindus, aylan, afghan-l, ltte, drone, saviour, benazir, centigrad, -s
##        Score: taliban, terror, humankind, terrorist, world', democraci, syria, muslim, peo
## Topic 13 Top Words:
##        Highest Prob: countri, intern, govern, peac, state, america, will, nation, peopl, a
```

```
##          FREX: guatemala, paraguay, bolivia, panama, costa, venezuela, rica, peru, hondura,
##          Lift: belaund, bilingu, borja, bustamant, chamorro, ecuador', fujimori, guatemalan,
##          Score: bolivia, paraguay, panama, ecuador, hondura, costa, guatemala, rica, venezue
## Topic 14 Top Words:
##          Highest Prob: nation, unit, will, state, countri, organ, govern, assembl, world, pe
##          FREX: connexion, portugues, sea-b, rhodesia, decolon, man, waldheim, portug, sea, h
##          Lift: ardor, brooksrandolph, gowon, trawler, lamizana, sangoul, prebisch, uthant, w
##          Score: co-oper, connexion, rhodesia, viet-nam, dialog, sea-b, favor, waldheim, port
## Topic 15 Top Words:
##          Highest Prob: nation, develop, peac, africa, countri, african, govern, unit, intern
##          FREX: sierra, liberia, leon, ethiopia, uganda, malawi, somalia, kenya, ghana, swazi
##          Lift: ajj, eritrea', ethiopia', gambia', indlovukazi, jammeh, kabbah, leonean, masi
##          Score: malawi, sierra, liberia, leon, somalia, ecowa, african, liberian, swaziland,
## Topic 16 Top Words:
##          Highest Prob: intern, nation, develop, unit, countri, secur, region, cooper, global
##          FREX: azerbaijan, kazakhstan, tajikistan, turkmenistan, mongolia, peacebuild, kyrgy
##          Lift: aral, ashgabat, baku-tbilisi-ceyhan, baku-tbilisi-kar, cica, dushanb, kyrgyzs
##          Score: azerbaijan, kazakhstan, tajikistan, millennium, turkmenistan, moldova, mdgs,
## Topic 17 Top Words:
##          Highest Prob: develop, world, intern, countri, nation, econom, new, will, must, pro
##          FREX: interdepend, technolog, concept, industri, balanc, mankind, factor, structur,
##          Lift: self-determination-, unpromis, inter-connexion, post-industri, trite, stratif
##          Score: co-oper, develop, world, econom, intern, problem, must, relat, new, interdep
## Topic 18 Top Words:
##          Highest Prob: world, will, can, one, countri, unit, year, now, must, nation, mani,
##          FREX: zealand, franc, perhap, told, get, britain, enough, wrong, littl, oil, sugges
##          Lift: re-inscrib, diesel, maori, shorthand, robot, solubl, re-inscript, shopkeep, b
##          Score: zealand, can, nuclear, caledonia, soviet, now, one, even, let, franc, seem,
```

Proportions

```
# Topical Proportions ----

proportions_prelim <- plot(prev_1, type = "summary", custom.labels = "", topic.names = topi
```