Hillary Clinton Emails

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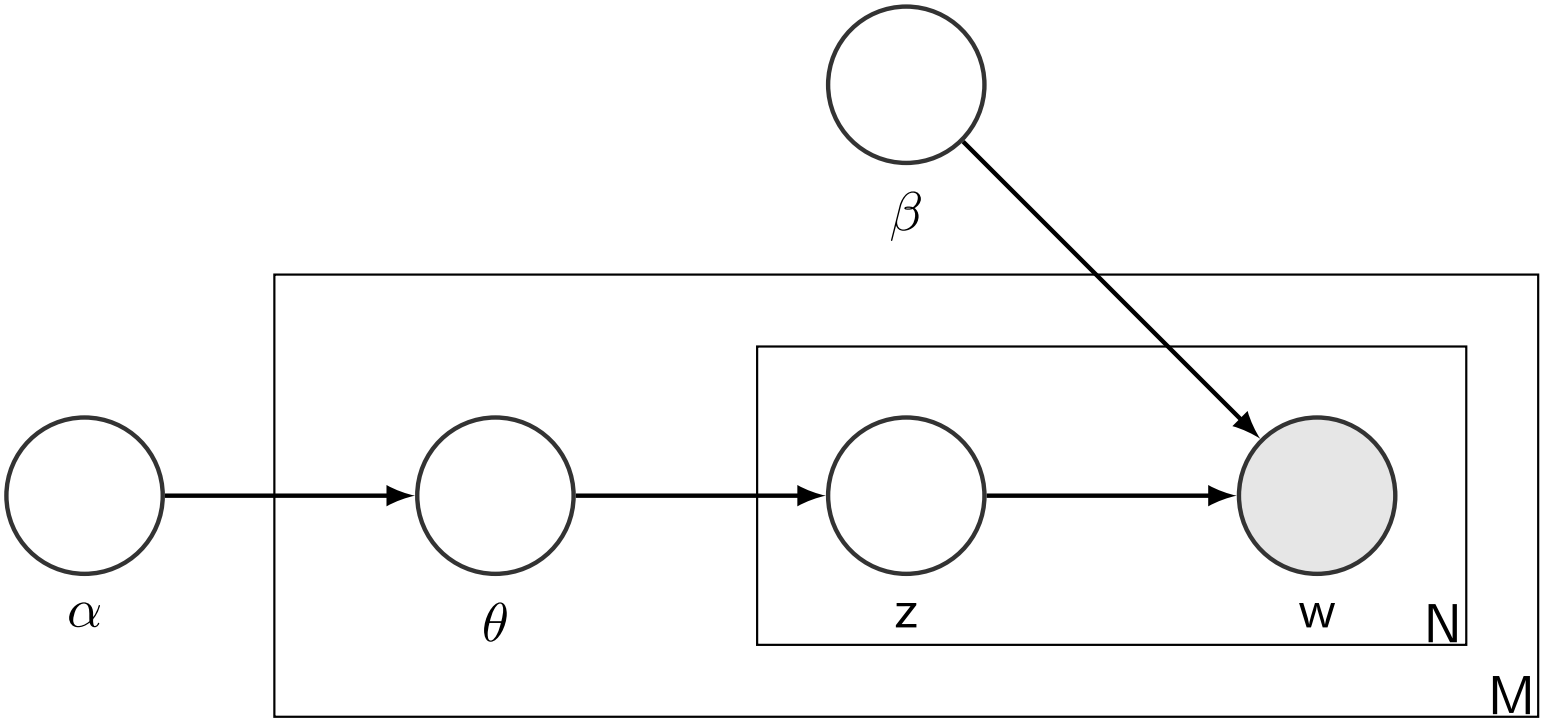
Latent Dirichlet Allocation



Latent Dirichlet Allocation: Some Details

- We use $K = 30$ topics for our resulting model.
- What we ultimately care about are θ and β.
- θ corresponds to how likely a topic is to appear in a document.
- β corresponds to how likely each word is to be associated with each topic.

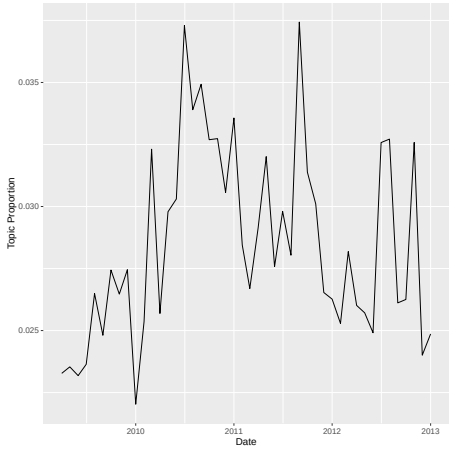
Latent Dirichlet Allocation: Some Details

- Some questions we want to answer with LDA
  - Can we see sensible topics in the LDA output?
  - Who is associated most with each issue?
  - Do the topics proportions for each email line up with real world events?
  - Can we predict the source of a given email?

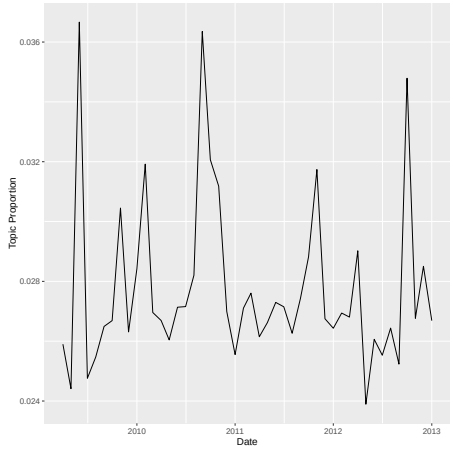
Some Interesting Topics

Israel	Elections	Libya	Afghanistan	Int. Dev.	Obama
israel	democrat	libya	afghanistan	develop	presid
isra	republican	secur	pakistan	state	obama
peace	american	travel	afghan	support	said
palestinian	polit	libyan	militari	global	hous
netanyahu	parti	iraq	general	program	white
east	elect	embassi	karzai	effort	administr
negoti	obama	attack	offici	intern	polici
arab	percent	kill	war	work	aid
state	candid	march	forc	includ	advis

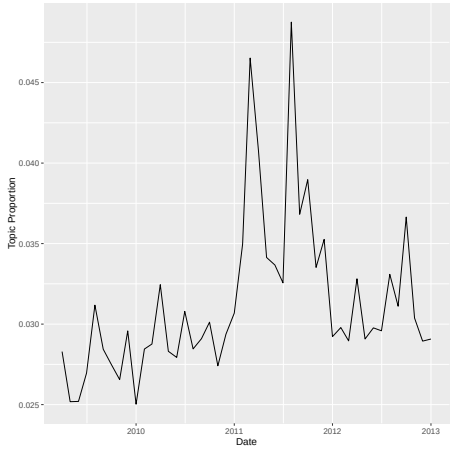
Topic Importance Over Time



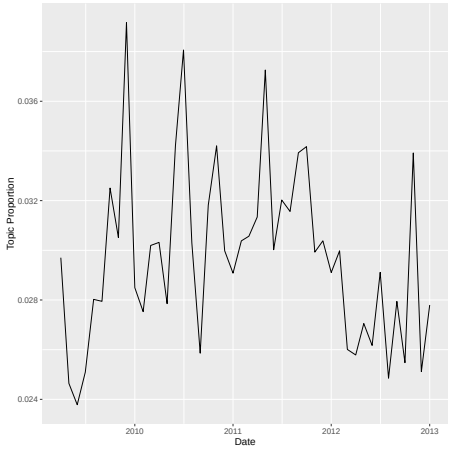
(a) Israel



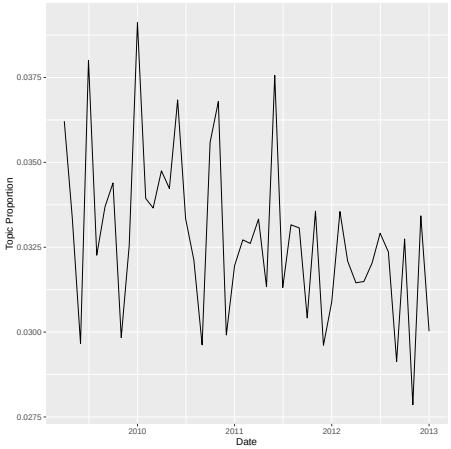
(b) Elections



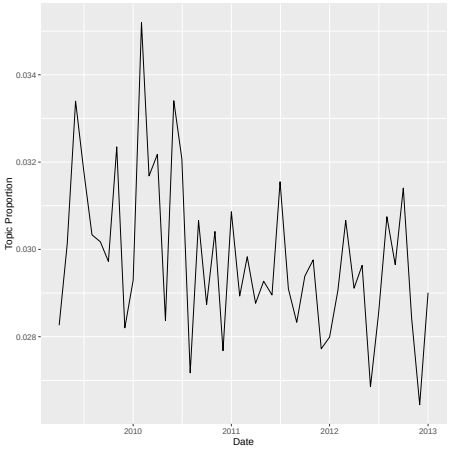
(c) Libya



(d) Afghanistan



(e) Int. Dev.



(f) Obama

Who Says What?

Israel	Elections	Libya	Afghanistan	Int. Dev.	Obama
Sidney Blumenthal (SB)	SB	Huma Abedin (HA)	Judith McHale (JM)	JM	SB
HA	Philippe Reines (PR)	Wendy Sherman (WS)	HA	Melanne Verveer (MV)	PR
Jake Sullivan (JS)	JM	JS	MV	Anne-Marie Slaughter (AMS)	Cherly Mills (CM)
AMS	CM	Monica Hanley (MH)	JS	CM	HA
Hillary Clinton (HC)	HA	SB	Richard Verma (RV)	JS	HC

Multinomial Logistic Regression

- We next want to ask can we predict who said what?
- To answer this question we employ multinomial regression.
- We take a subset of people who sent emails, only those who have more that 100 emails sent and try prediction for these.

Multinomial Logistic Regression Results

Source	Success Rate	Testing Observations
Hillary Clinton	0.74	849
Philippe Reines	0.06	34
Claire Coleman	0.52	27
Lauren Jiloty	0.42	71
Huma Abedin	0.36	376
Jake Sullivan	0.23	410
Sidney Blumenthal	0.29	87
Cherly Mills	0.31	491
Anne-Marie Slaughter	0.36	42
Monica Hanley	0.09	53
Judith McHale	0.25	28
Robert Russo	0.00	10
Richard Verma	0.26	19
Wendy Sherman	0.08	12
Melanne Verveer	0.30	30
Lona Valmoro	0.34	41