

The Effect of Elections and Prime Ministers on Discussion in the Australian Federal Parliament (1901–2018)

Monica Alexander, University of Toronto
Rohan Alexander, Australian National University

Annual Conference of The Political Methodology Specialist Group
University of Warwick
11 January 2019

Thank you to the ANU RSE for the funding to attend this conference

Introduction

Data

Topics

Model

Results

Conclusion

Motivation

Elections and changes in prime minister occur regularly and are major events, but the broad conditions often remain the same.



Motivation

**“When the government changes,
the country changes”**

*Paul Keating on the danger of himself being replaced
by John Howard (as quoted by Paul Kelly).*

**“There's no such thing as changing
the government without changing
the circumstances of the country”**

*John Howard on the danger of himself being replaced
by Kevin Rudd (as quoted by Peter van Onselen).*



Paul Keating by Robert Lyall Hannaford.

Motivation

In Australia the prime minister is decided by the party in power and can be replaced without an election. Similarly, a re-elected government can either ‘reboot’ or focus on stability after being returned. But the party in power, much of the cabinet, and general economic conditions, remained unchanged despite either of these significant events.



Julia Gillard by Vincent Fantauzzo.

Questions

Do elections affect the topics discussed in the Australian Parliament House? For instance, does John Howard change focus after each election win?

Similarly, does a changed prime minister affect the topics discussed in the Australian Parliament House? For instance, is Paul Keating much different to Bob Hawke?

Has this changed over time? For instance, is John Howard's 1996–2007 different to Robert Menzies' 1949–1966?



John Howard by Jiawei Shen.

Approach

We first summarise what was said in the Australian Parliament House from Federation in 1901 though to 2018 using a correlated topic model.

Then analyse the changes in those topics using a Bayesian Dirichlet model with government and election levels effects.

We are looking neighbouring prime ministerial or election periods where the ‘mix’ of topics is different.



Bob Hawke by William (Bill) Leak.

Findings

Prime minister

Changes in prime minister tend be associated with topic changes even when the party in power does not change.

Elections

Elections where the party in power also changes are associated with topic changes.

Timing

Since the 1990s re-elections begin to be associated with a significant change in topics.



Malcolm Fraser by Sir Ivor Henry Hele.

Contributions

Data

We bring an essentially-complete new corpus of who said what in the Australian Federal Parliament on a daily basis.

Methods

We introduce an alternative to the STM approach that: 1) allows more-complicated auto-correlated functional forms; 2) implements pooling across groups of similar days; and 3) identifies outlying topic distributions without the need to pre-specify the event of interest.

Australian political knowledge

We show one way in which Australian politics has changed over time.



Gough Whitlam by Clifton Ernest Pugh.

Introduction

Data

Topics

Model

Results

Conclusion

Data

Hansard PDFs are available since Federation (1901). XML available, but incomplete. No turnkey Hansard corpus for Australian researchers, yet.

Creating a corpus required a large PDF-parsing and data-cleaning exercise. We end up with 7,934 days in House of Representations and 6,746 days in Senate, across 118 years.

Our CSV corpus (c.4GB) is available for other researchers.

House of Representatives.

Friday, 13 July, 1906.

Mr. SPEAKER took the chair at 10.30 a.m., and read prayers.

IMPERIAL DEFENCE COMMITTEE'S RECOMMENDATIONS.

Mr. KELLY.—In view of the fact that the Government itself asked the advice of the Imperial Defence Committee on the question of Australian defences—(1) Will the Government inform the House as soon as a decision is come to if it is its intention not to follow the advice it has itself sought on the larger questions involved? (2) If the Government decides not to follow the Imperial Defence Committee's advice, will the Government put the House in possession of the Imperial Defence Committee's arguments on the question as well as that of its local advisers?

Mr. DEAKIN.—I have within the last few weeks addressed the Home authorities by despatch with regard to the very inconvenient and uncertain practice at present obtaining of marking "confidential" certain communications passing between them and ourselves. The principle followed is not at all clear, though we have been at some pains to try to discover it. The request preferred was for a complete scheme

ness in our chain of defence, or possibilities which it is not advisable to suggest. The whole matter should, and must, be laid before Parliament if it is to be effectively dealt with.

CITY TELEGRAPH OFFICES.

Mr. DUGALD THOMSON asked the Postmaster-General, *upon notice*—

1. Will he name the branch city telegraph offices in Sydney and in Melbourne from which instruments have been recently, or are to be, removed?

2. Which of those offices have tube connexion with the head office?

3. Which will require a messenger service for conveyance of messages to a despatching office?

4. How frequently will messengers leave each of such offices with the accumulated messages?

Mr. AUSTIN CHAPMAN.—Inquiries are being made, and answers will be furnished as early as possible.

DEATH OF MR. SEDDON.

Mr. DEAKIN (Ballarat—Minister of External Affairs) [10.38].—It is fitting that honorable members should be informed of the acknowledgment by the Acting Premier of New Zealand and Mrs. Seddon of the resolutions of this Parliament recording our regret at the untimely death of the late Prime Minister of that Colony, and expressing our sympathy with his family and the people of New Zealand. The Acting Prime Minister of New Zealand writes:—

Prime Minister's Office,
Wellington, 7th July, 1906.

Sir,

I have the honour to acknowledge receipt of your letter of 28th June, forwarding a memorial copy of the report of proceedings of the Commonwealth Parliament in passing the resolutions

First page of Hansard for 13 July 1906 in the House of Representations.

Introduction

Data

Topics

Model

Results

Conclusion

Vignette

“The Opposition wages policy is a joke and would be washed to one side in the real economy, if it were ever put into place. Yet Opposition members talk about the Opposition's credentials... the Opposition crowd could not raffle a duck in a pub.”

Paul Keating, 16 September 1986.



Word counts

date	the	opposition	wages	policy	...
1986-09-16	3	4	1	1	...
...



Topic proportions

date	Topic 1: economy, wages, policy, ...	Topic 2: opposition, opposite, joke,
1986-09-16	0.6	0.4	...
...

Topic model output

We use a Correlated Topic Model (CTM) and specify 80 topics. CTM output is a proportion for each of the 80 topics for each day.

Topics are defined by collections of words, e.g. Topic 4: defence, forces, personnel, army, military, defence_force, equipment, base, aircraft, air...; and Topic 74: budget, tax, billion, million, per_cent, business, economy, support, jobs, governments...

Chamber	Date	Topic	Proportion
HoR	1901-05-09	1	1.4889e-04
HoR	1901-05-10	1	3.2654e-04
HoR	1901-05-21	1	1.8766e-04
HoR	1901-05-22	1	1.1172e-04
HoR	1901-05-23	1	2.4848e-03
HoR	1901-05-29	1	3.7861e-03
HoR	1901-05-30	1	2.4947e-03
HoR	1901-05-31	1	2.8733e-05
...

Output from a topic model.

Introduction

Data

Topics

Model

Results

Conclusion

Model

The topic, p , proportion on some day, d , (e.g. the 0.6 in the example) is $\theta_{c,d,1:P}$:

$$\theta_{c,d,1:P} \sim \text{Dirichlet}(\mu_{c,s[d],1:P})$$

$$\log \mu_{c,s,p} = \alpha_{g,p} + \beta_{e,p} \cdot s + \delta_{c,s,p}$$

The Dirichlet distribution is useful when we have proportions and more than two categories. Our model considers prime minister and election levels effects and sitting period random effects.

Prime minister levels effects

$$\log \mu_{c,s,p} = \alpha_{g,p} + \beta_{e,p} \cdot s + \delta_{c,s,p}$$

The term for the prime minister assumes there is some underlying mean effect of each prime minister on the topic distribution. We place uninformative priors on each of these parameters:

$$\alpha_{g,p} \sim N(0,100) .$$

Election levels effects

$$\log \mu_{c,s,p} = \alpha_{g,p} + \beta_{e,p} \cdot s + \delta_{c,s,p}$$

The election term assumes there is some effect of an election on the topic distribution. This effect decays the further away from the election some sitting period is. Again, uninformative priors:

$$\beta_{e,p} \sim N(0,100).$$

Sitting period random effects

$$\log \mu_{c,s,p} = \alpha_{g,p} + \beta_{e,p} \cdot s + \delta_{c,s,p}$$

The sitting-period-specific random effect allows the topic distributions in some sitting periods to be different than would be expected based on the prime minister and election effects. This allows us to identify large deviations away from the expected distribution, thus helping to identify the effect of other, non-prime-minister and non-election events. Also, this set-up partially pools effects across sitting periods.

$$\delta_{c,s,p} \sim N(0, \sigma_{g,p}^2)$$

$$\sigma_{g,p}^2 \sim U(0, 3)$$

Introduction

Data

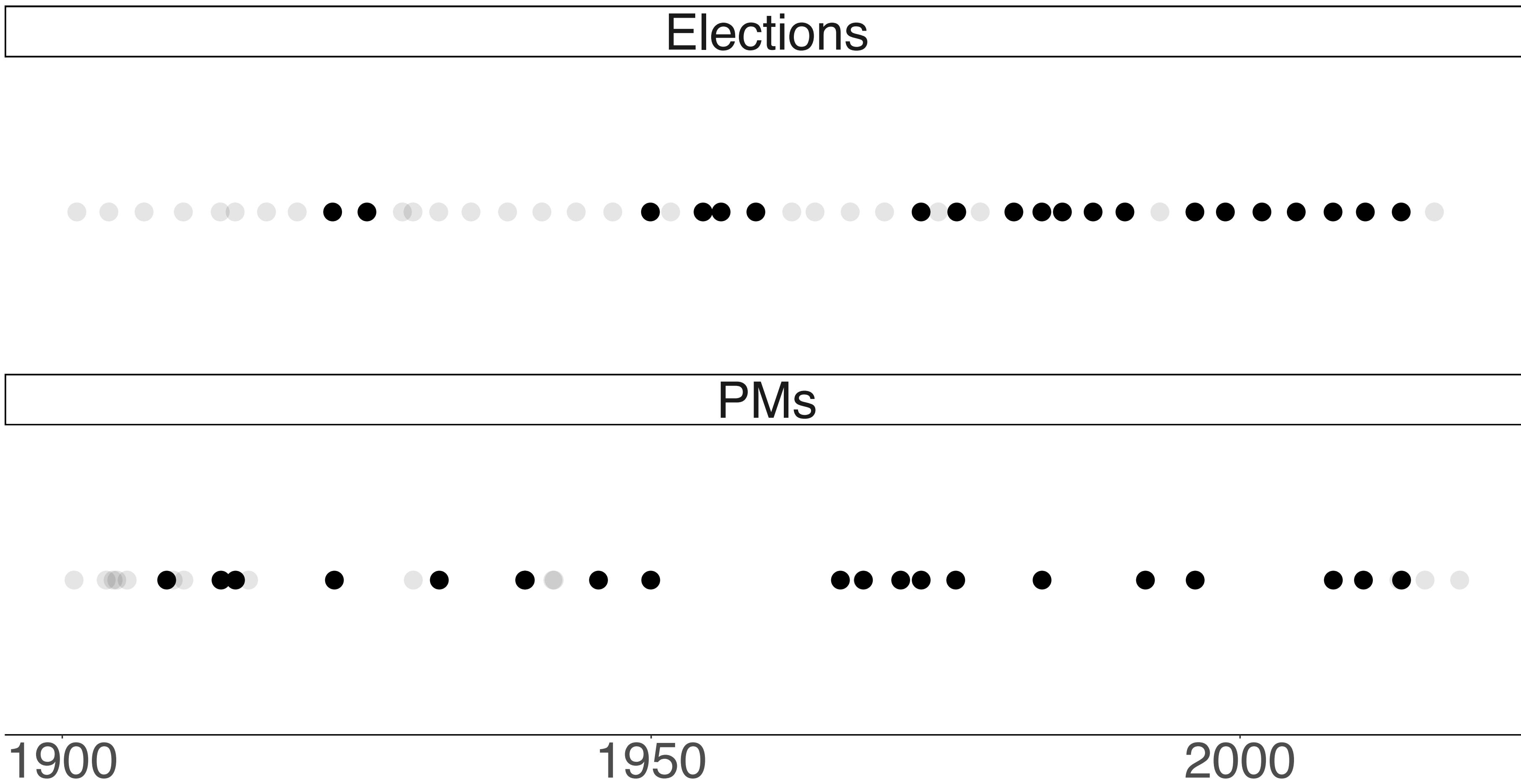
Topics

Model

Results

Conclusion

Significant elections and PMs



Each election/PM is a grey dot. Those that were significantly different to their predecessor are in black.

Introduction

Data

Topics

Model

Results

Conclusion

Summary

1. Collect, parse, and clean Australian Hansard PDFs to construct a corpus with around 15,000 days spread across 118 years.
2. Summarise the text using a topic model, which provides a quantitative sense of what was talked about each day.
3. Analyse the topic model output using a Bayesian Dirichlet model to look for changes in what is talked about based on who is the prime minister and which election period we are in.
4. Find that a different prime minister tends to bring a change in the mix of what is talked about, but that elections have mostly only been associated with a change since the 1990s.

Weaknesses

Data

Even after cleaning the dataset remains imperfect and is more fit-for-purpose than of broad applicability.

Topics

The number of topics needs to be tractable for the model, but more topics would be better based on usual topic-model diagnostics.

Model

We consider a two-stage process, but do not appropriately propagate the uncertainty of the topic distribution estimation stage.



Photo of the Harold Holt Memorial Pool by Kbpool2012, from Wikimedia Commons.

Research agenda

“But where are you really from? The Changing Effect of State and Party on Senators’ Discussion in the Australian Parliament House (1901–2018)” with Patrick Leslie. We analyse how what is said in the Senate is affected by the state the senator represents and how this has changed over time. Directly considers words:

$$\mathbf{c}_{i,t} \sim \text{multinomial}(n_{i,t}, \mathbf{p}_{i,t})$$

$$p_{i,t} = \alpha_i + \beta_{1,t} \times \text{chamber}_i + \beta_{2,t} \times \text{party} + \beta_{3,t} \times \text{state}$$

“Your house or mine? The Changing Focus of the Australian Colonial Parliaments (1880–1920)” with Tim Hatton. We examine the changing focus of the colonial (later state) parliaments before and after Federation.

“The Effect of Elections and Prime Ministers on Discussion in the Australian Federal Parliament (1901–2018)”

Monica Alexander and Rohan Alexander

Email: rohanalexander@anu.edu.au.

Twitter: @rohanalexander.

Paper available at: rohanalexander.com/academic.

Data freely available for download and use, but maybe contact me if you need to know where the bodies are buried.

Acknowledgements: Thank you to Chris Cochrane, Dan Simpson, Jill Sheppard, John McAndrews, John Tang, Leslie Root, Martine Mariotti, Matt Jacob, Matthew Kerby, Myles Clark, Ruth Howlett, Tianyi Wang, Tim Hatton, and Zach Ward for their invaluable contributions; and to the UC Berkeley Demography Department for the use of their computing resources. We are grateful for the many excellent comments that we received from seminar participants at the ANU SPIR, the ANU RSE, the Australian Parliamentary Library, the Max Planck Institute for Demographic Research, and the U of T Political Behavior Group.

Slides theme based on Nathan Lane, see <https://slides.com/nathanlane/kdi#/>.