

Look Who's Talking: Bipartite Networks as Representations of a Topic Model of New Zealand Parliamentary Speeches

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Te Pūnaha Matatini
Data ■ Knowledge ■ Insight



Outline

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Motivation

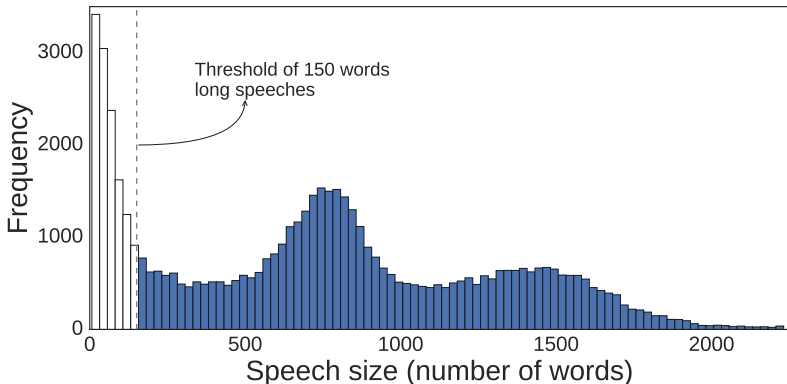
- Lack of quantitative methods to measure the participation to parliamentary debate and discourse of elected Members of Parliament (MPs).
- To develop an exploratory study for a quantitative analysis of politics, using parliamentary speeches and based on topic modeling and network analysis.

Background

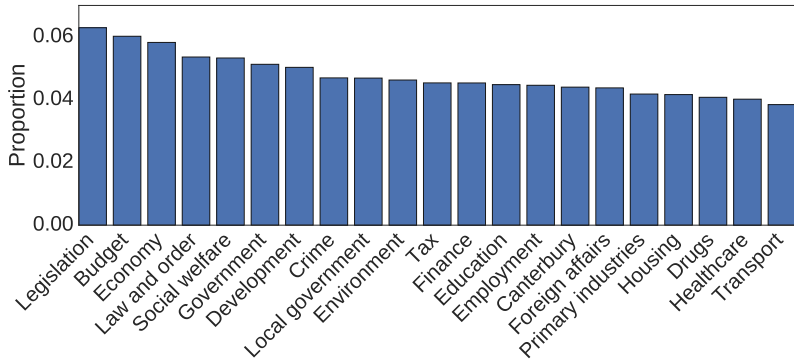
- Two-party era for most of the 20th century: National (right-leaning) and Labour (left-leaning).
- Adoption of mixed-member proportional (MMP) system in 1996: smaller parties join.
- Smaller parties balancing the power.
- Four terms were analyzed: 2002-2005, 2005-2008, 2008-2011, 2011-2014.
- Government transition in period analyzed: Labour (2002-2008) and National (2008-).

Dataset

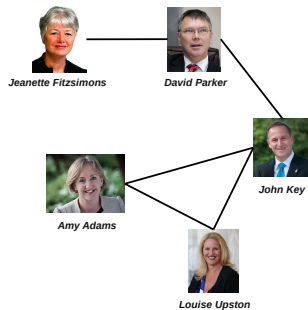
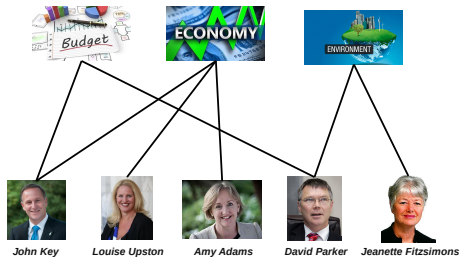
- New Zealand Hansard database - speeches,
- more than 150 words long,
- about 48,000 speeches.
- nearly 40 million words



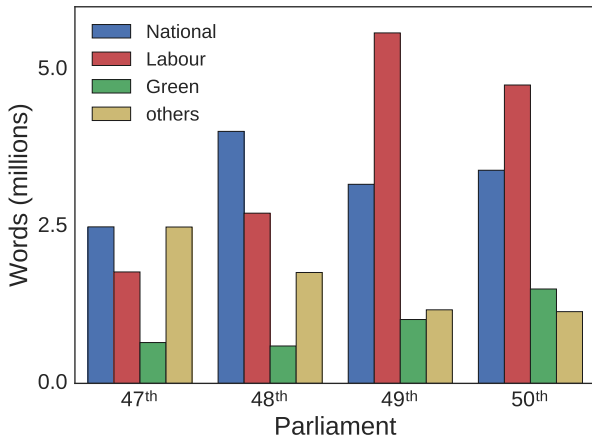
Topic modeling



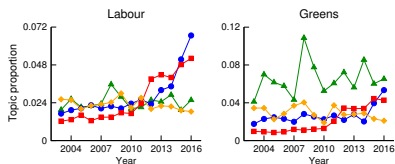
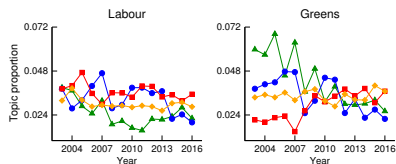
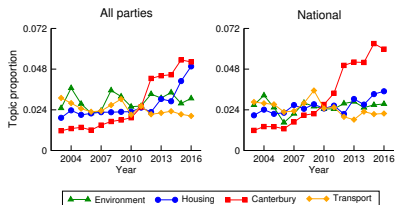
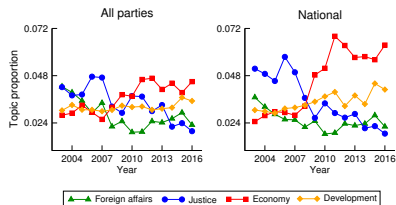
Bipartite networks



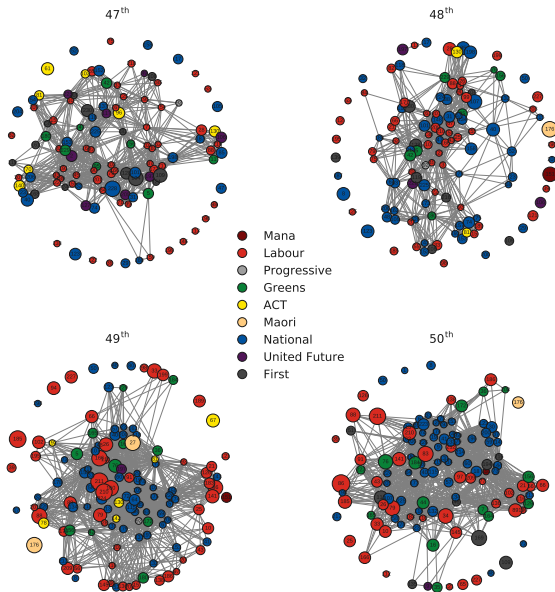
Verbosity



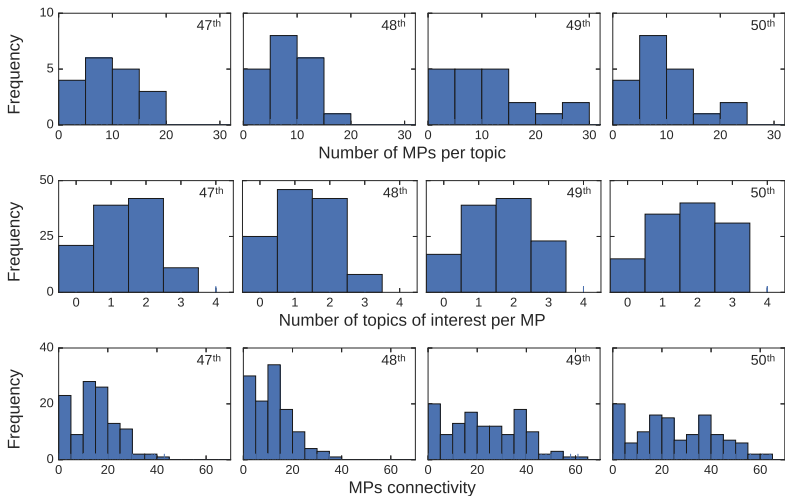
Topics evolution



Networks

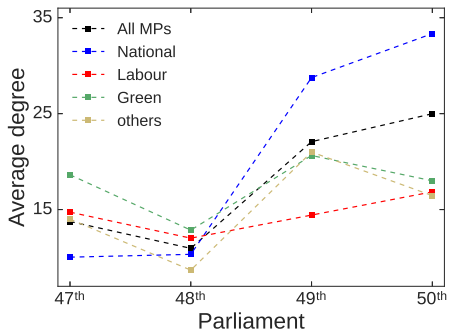


Degree distributions

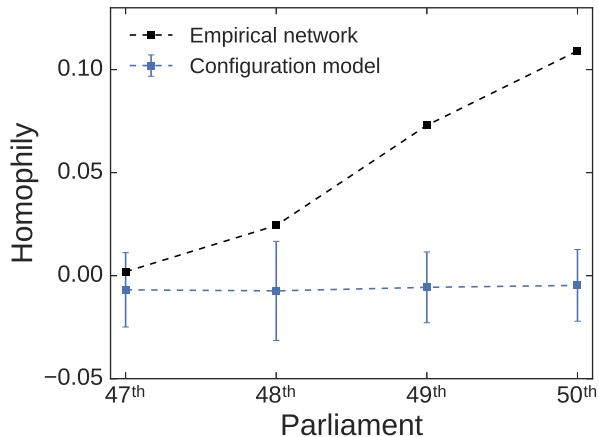


MPs and average degree

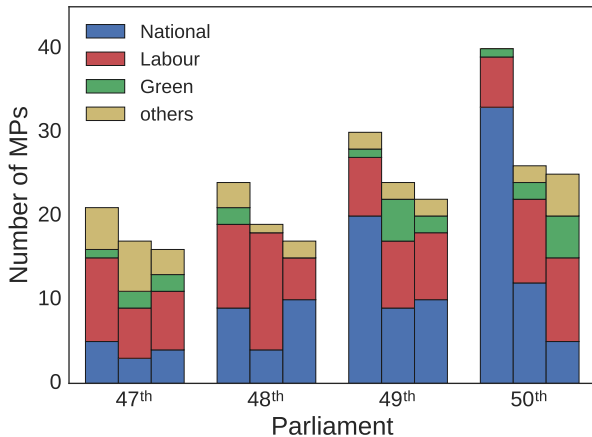
Term	National	Labour	Greens	others
47 th	26	52	8	19
48 th	48	50	7	16
49 th	58	47	11	11
50 th	61	39	14	11



Party homophily



Communities



Conclusions

- More verbosity since 2008, coinciding with financial crisis and change in government.
- Opposition party tends to be more verbose in parliament.
- Topic trends: housing (from 2013), Canterbury (from 2011), economy (from 2008).
- Topic preferences: environment (Green) and economy (National).
- More heterogeneity of topics of interest over time.
- Increasing homophily (MPs sharing more interests within their parties).
- Formation of big National community - party cohesion once in government, different behavior than when Labour was in government.
- Influence of small parties are reducing over time.

Thank you! Questions?