Electoral Studies and data-driven analysis: A Victorian case study

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Abstract: Australia and its component states have rich histories of electoral competition and political institutions. Yet accessible data and existing studies remain quite rare. Currently, the materials available are patchy and vary in quality and depth. These often understandably focus on national-scale processes while neglecting the diverse experiences of different states and jurisdictions. One way state-based Parliaments and associated researchers can contribute to filling this void is through producing good quality and engaging materials using data analysis and visualisation-based approaches. The Victorian Parliamentary Library produced material experimenting with these approaches in the lead-up to the December 2022 election. It utilised data from the web and official sources to provide an overview of the history of electoral contests in the state. Using a range of data analysis tools and visualisation and geo-visualisation packages in R and Python, it presented an overview history with various illustrations of election results over time. There are undoubtedly other opportunities for undertaking similar investigations in other jurisdictions and generating more interest in Australian political institutions. Data analysis and visualisation tools continue to become more available and are one set of tools that could help underpin such approaches. Following a review of the state of electoral studies and the potential for data-based approaches for research, it outlines their application to Victoria's electoral history. The conclusion argues that the potential exists for more extensive studies by digitising historical and contemporary electoral data sources.

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[1] Information in this paper was current as at the time of publication. Any views expressed are those of the author.

INTRODUCTION

Australia and its component states have rich histories of electoral competition and political institutions. Yet accessible data and existing studies remain quite rare. While more material is available nationally, less exists at the state and local levels. In Victoria, for example, the official parliamentary history (*A People's Counsel,* published in 1992) is the primary 'go-to' source for published information.[2] The November 2022 state election in Victoria allowed parliamentary researchers to provide some redress for this by producing an interactive and visualisation-based publication focusing on the state's electoral history.[3] There are undoubtedly other opportunities for undertaking similar investigations in other jurisdictions and generating more interest in Australian political institutions.

There are good reasons for researching and publishing more material on the history of electoral competition at these levels. It could help inspire a greater interest in and appreciation of the history and functions of parliamentary institutions. On the one hand, evidence exists of increasing levels of political dissatisfaction in Australia. As with many other jurisdictions worldwide, there is growing disenchantment with political institutions.[4] Parliaments face significant challenges in meeting changed expectations and the rise of new forms of communication and interaction.[5] Perhaps the challenge remains moving people away from dissatisfaction towards critical engagement. One way to encourage this could be through more accessible data and innovatively presented information. A renewed focus on evaluating and refreshing civics education

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[2] Raymond Wright, A People's Counsel: A history of the Parliament of Victoria. 1856-1990. South Melbourne: Oxford University Press, 1992.

[3] Ben Reid and Caleb Triscari, Parliamentary Library & Information Service, Parliament of Victoria, 'Visualising Victoria's electoral history.' Accessed at:
<https://www.parliament.vic.gov.au/4adf09/globalassets/images/news/library-papers/2022_12_visualising_victorias_electoral_history_rn_.pdf>.

[4] Christine Eder, Ingvill C. Mochmann and Markus Quandt, *Political Trust and Disenchantment with Politics: International Perspectives*. Leiden: Brill. 2014; Bede Harris, *Constitutional Reform as a Remedy for Political Disenchantment in Australia*. Singapore: Springer. 2020; Colin Hay, Why we hate politics. London: Polity Press, 2007.

[5] Cristina Leston-Bandeira, 'How public engagement has become a must for parliaments in today's democracies' *Australasian Parliamentary Review*, 37(2) 2022, pp. 8-16; Andres Lomp, 'Taking community engagement to the next level.' *Australasian Parliamentary Review*, 37(2) 2022, pp. 26-29.

may, for instance, involves producing and disseminating accessible material.[6] Other audiences would also be interested.

Data analysis and visualisation tools continue to become more available and are one set of tools that could help underpin such approaches.[7] The methods used in the Victorian Parliamentary Library study provide an overview of some of the applications and code-based languages available for electoral analysis. It involved the extensive application of R (and, to a lesser extent, Python) coding.[8] The discussion below details the methods used for obtaining and processing data, conducting analysis, and creating and deploying visualisations.

This article argues that data analysis and visualisation methods offer avenues for renewed research into the development of Australia's political and electoral systems and communicating these studies to broader audiences. Following a review of the state of electoral studies and the potential for data-based approaches for research, it outlines their application to Victoria's electoral history. The article argues that the potential exists for more extensive studies by digitising historical and contemporary electoral data sources. In a sense, this is a 'paper about a paper': it illustrates both the original analysis and the challenges and potential for further research and publications using data and visualisation tools.

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[6] Zareh Ghazarian and Jacqueline Laughland-Booÿ, 'Submission to the Electoral Matters Committee. *Inquiry into the Conduct of the 2022 Victorian State Election*. Accessed at: <https://www.parliament.vic.gov.au/490bf3/contentassets/fd34cb6dd71e436580e2701e0b9b5205/submission-documents/093.-dr-zareh-ghazarian_redacted.pdf>.

[7] Edward Tufte, Beautiful Evidence. Cheshire, Conn.: Graphics Press, 2006; Cole Nussbaumer Knaflic. Storytelling with Data: A data visualization guide for business professionals. Hoboken, New Jersey: Wiley, 2015.

[8] Mark Andrews, Doing Data Science in R: *An introduction for social scientists*. London: SAGE Publications, 2021. Jose Manuel Magallanes Reyes, *Introduction to Data Science for Social and Policy Research*. Cambridge: Cambridge University Press, 2017.

ELECTORAL STUDIES AND AUSTRALIA

Various disciplines focus on studying elections, party systems and legislative processes.[9] Their focus ranges from understanding how electoral systems work to analysing and explaining voting trends and outcomes. There are many different electoral systems internationally and historically, with considerable debate over their comparative appropriateness. Various political parties and party systems invariably both reflect and shape these institutions. The processes underpinning the formulation and implementation of legislation also vary.

While substantial literature dealing with many of these aspects of electoral institutions in Australia exists, there are two crucial gaps. First, much of the literature on Australian politics understandably focuses on national-scale processes.[10] These understandably emphasise the electoral system's general features, the party system's emergence, and the underlying social bases of support for the main electoral parties. The variations and differences in the state-level political institutions and histories are less well documented. In the case of Victoria, scholarly journals and some other sources provide state-level commentary and analyses, especially in the post-war period. Some materials exist on more recent facets of Victoria's political history.[11] Regarding a longer-run view, the most comprehensive source remains Raymond Wright's official parliamentary history or more general state histories. [12]

Second, there is also scope for deploying more recently developed approaches based on data analysis and visualisation. Researchers interested in electoral history and processes also face considerable limits on data availability. Much of the historical data on election results primarily exists in analogue form. Recent attempts by the University of Western Australia to develop summary historical datasets on election results in

[9] Herron. Erik S., Robert J. Pekkanen, and Matthew S. Shugart (eds), *The Oxford Handbook of Electoral Systems*. Oxford Handbooks (2018); online edition. Oxford Academic. Accessed at: <https://doi.org/10.1093/oxfordhb/9780190258658.001.0001>.

[10] Donald Aitkin, *Stability and Change in Australian Politics*. Canberra: ANU Press, 1982; Frank Bongiorno, *Dreamers and Schemers: A Political History of Australia*. Collingwood: Black Inc, 2022.

[11] Paul Strangio and Brian J. Costar (eds), *The Victorian Premiers, 1856-2006*. Leichhardt: Federation Press, 2006; Paul Strangio, Neither Power Nor Glory: 100 Years Of Political Labor In Victoria, 1856-1956. Parkville: University of Melbourne Press, 2012; 'Victoria.' Australian Journal of Politics and History, various years.

[12] Raymond Wright, A People's Counsel.; Geoffrey Blainey, *A History of Victoria*. Cambridge: Cambridge University Press, 2013.

Australia floundered.[13] Where data is available, though, it provides the potential for new insights and analysis.

Electoral outcomes and institutional changes often reflect responses to social challenges and change. The studies of the econometrics and geography of elections have increasingly involved applying sophisticated Geographical Information- Systems-based and other computational tools.[14] More recently, the availability of visualisation-based computation tools has added momentum to and the potential for new avenues of research and education.

DATA ANALYSIS AND VISUALISATION

Developing more significant computational resources and software availability provides avenues for more in-depth studies of historical and contemporary data. Paradoxically, while computational power and applications have grown in scope, a lack of readily available longer-run historical data hampers research.

The Victorian Parliamentary Library's historical study obtained data from three primary sources. First, the Victorian Electoral Commission (VEC) provides access to more recent data from 2010 onwards.[15] The data has considerable detail, including vote counts for both houses. Nonetheless, the data's organisation and categorisation organisation could be improved, especially when compared to the Australian Electoral Commission (AEC) and other authorities.[16] The AEC's data provides candidates, electorates, and polling booths with consistent unique identifiers to enable efficient manipulation and

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[13] University of Western Australia, 'Search for Australian election results, governments and parties in the Australian Politics and Elections Database.' Accessed at: <https://elections.uwa.edu.au/>.

[14] Ron Johnston and Peter J. Taylor, *Geography of Elections*. London: Taylor and Francis Group, 2014; David Reynolds, 'Whither Electoral Geography? A Critique,' in *Developments in electoral geography*. Ron Johnston, Fred M. Shelley & Peter J. Taylor (eds), London: Routledge, 2015, pp. 22-38, Ben Reid and Gang-Jun Liu, 'One Nation and the Heartland's Cleavage: An Exploratory Spatial Data Analysis,' in Bligh Grant, Tod Moore & Tony Lynch (eds), *The Rise of Right-Populism: Pauline Hanson's One Nation and Australian politics*. Singapore: Springer, 2019, pp. 79-102.

[15] Victorian Electoral Commission, 'State Election Results.' Accessed at:<https://www.vec.vic.gov.au/results/state-election-results>.

[16] Australian Electoral Commission, 'Election Results: Tally room archive'. Accessed at: <https://results.aec.gov.au/>.

record joining.[17] Conversely, the VEC offers a mix of materials and requires conducting analysis and joins using strings, providing many challenges and opening the door to errors and miscalculations.

Second, the UWA electoral data archive was adequate for obtaining summaries of overall seat data and votes by party. However, the resource does not provide electorate-level data, let alone polling place results.[18]

Third, there is a thorough electronic collection of electorate-level data for the Victorian Legislative Assembly and Legislative Council. However, it is a private collection compiled by psephologist Adam Carr and poses two problems: accuracy and presentation. [19] In terms of accuracy, Carr acknowledges that his 'archive doubtless contains many errors, some derived from the original sources, some of my own making.' [20] His data is based on transcriptions from summary sources, most notably compilation volumes of election data.[21] Regarding presentation, the data is also only available in textual rather than tabular form. The tables within the text are formatted manually rather than as exportable comma-separated files.

Because of these challenging features of the data set, accessing and analysing the data required a range of tools. The base Python application enabled retrieving each page of Carr's data and downloading the data as text files. Then, extensive regular expression (regex) code sorted the data into a large data set and table for the years between 1846 and 2018.[22] The analysis and obtaining of additional data used R as its primary platform with substantial reliance on the Rvest package and the Tidyverse ''ecosystem''.[23] The challenge was accurately parsing the data from summary table form into the 'long'

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[17] See Ben Raue, 'Data repository'. Accessed at:<https://www.tallyroom.com.au/>.

[18] University of Western Australia. 'List of all General Election results for the Legislative Assembly in Victoria.' Accessed at: <https://elections.uwa.edu.au/listelections.lasso?ElectionType=1&State=VIC>.

[19] Adam Carr, 'Psephos - Adam Carr's Election Archive.' Accessed at: <http://psephos.adam-carr.net/>.

[20] Carr, 'Psephos'.

[21] Such as Colin A Hughes and B D Graham, *Voting for the Victoria Legislative Assembly 1890-1964*. Canberra: ANU Press, 1975.

[22] Ruslan Mitkov, *The Oxford Handbook of Computational Linguistics*. Oxford: Oxford University Press, 2006, p.754.

[23] RStudio, 'Tidyverse.' Accessed at: <https://www.tidyverse.org/>, Hadley Wickham, 'rvest: Easily Harvest (Scrape) Web Pages' Accessed at: <https://cran.r-project.org/web/packages/rvest/>.

format needed for analysis and visualisation—additional challenges required judgement on grouping and recoding values into consistent party name affiliations.

Much of the combining of data, initial exploratory data analysis and generation of summary statistics also utilised R Tidyverse. There was also much overlap between these steps and initial visualisations. R ggplot2 enabled readily and rapidly produced visualisations of both votes received and seats obtained. It was possible to develop working hypotheses on the historical stages of Victoria's voting system and election history between 1890 and the present. These visualisations and historical textual data references constituted the other backbone of the analysis.[24]

Both the VEC and the Victorian Parliamentary Library had produced existing digitised ESRI shapefiles that formed the basis of the comprehensive mapping of data, especially for more recent years. These entailed using a combination of the ESRI ArcGIS Pro 3.1.3 and R sf.[25] As well as standard choropleth maps - which use differences in colouring within predefined areas to indicate the values of a particular quantity - the construction of cartographic hexagrams allowed for a more helpful account of the changing character of seats across time. As Langton and Solymosi explain,

> *even the most well-intentioned cartographer may introduce misrepresentation by mapping irregularly shaped and sized areas… different methods of visualising area-based data can remedy (or exacerbate) this misrepresentation.[26]*

Cartographic hexagrams are one approach, with their main advantage being that identically sized shapes represent each electoral district.

The final challenge was deploying these visualisations via the *R Plotly* and *htmlwidget* packages.[27] *Plotly* and *ggplotly* allowed for building dynamic interaction into the

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[24] Most notably, Wright, A People's Counsel.

[25] Edzer Pebesma, 'Simple Features for R.' Accessed at: <https://r-spatial.github.io/sf/>.

[26] Samuel H. Langton and Reka Solymosi, 'Cartograms, Hexograms and Regular grids: Minimising misrepresentation in spatial data visualisations.' *Environment and Planning B*, 48, 2019, pp. 348-357.

[27] Plotly Technologies Inc, 'Plotly R Open-Source Graphing Library.' Accessed at: <https://plotly.com/r/>, Ramnath Vaidyanathan, Kenton Russell, and RStudio, Inc. 'htmlwidgets for R.' Accessed at: <https://www.htmlwidgets.org/>.

diagrams and figures. Their conversion into HTML widgets enabled their deployment via a 'blob' interface in the Victorian Parliamentary Library's intranet. Unfortunately, these could not yet be directly deployed to the website via an HTML document version of the final paper. Instead, the visualisations remained embedded as links in the paper's PDF version, allowing an online reader to access them by clicking them.

As outlined above, the Carr and VEC data combination created a large table of district-level primary votes for both houses from 1846-2018. It is accessible via the original paper or through the notes.[28] Although some errors in the data across earlier years still need to be corrected, it provided the foundations for analysis. It is also available to other researchers looking for detailed results at the district level. It is downloadable as an Excel workbook or CSV file.[29]

A *LONGUE DURÉE* VIEW OF VICTORIA'S ELECTORAL AND PARTY SYSTEMS

This section of the article summarises the information presented in the original paper.[30] The data table and additional sources constituted the basis for the two main 'workhorse' visualisations of the votes and seats obtained by each candidate and party (Figures 1 and 2) for the Legislative Assembly. The stacked bar graph demonstrates changes between 1890 and 2018. The cut-off year 1890 was chosen as it corresponds with the Australian Labor Party's emergence and the beginning of the state's party system. Still, until the second half of the 1900s, many candidates were categorised as 'pre-party'.

The election result data for seats and candidates required some amalgamation of parties into categories. While Labor remained a constant throughout the period visualised, the centre-right parties were amalgamated into a single category, 'Liberal'. Figure 2 illustrates the proportions of seats held by each party. In both cases, the online tools allow the reader to focus on years and periods. Similar data is presented for the

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[28] Ben Reid and Caleb Triscari, 'Raw Data on Legislative Assembly Results.' Accessed at: <https://povresearch.blob.core.windows.net/2022/Election%20history/tab3.html>.

[29] A more user-friendly dashboard is available at Ben Reid and Caleb Triscari, 'Legislative Assembly Results, Victoria, 1890-2018' Accessed at: <https://app.powerbi.com/view?r=eyJrIjoiNTAwNzVjMGMtNzNkYS00Y2QzLTg5YjQtN2Y4ZGNmYzY2OTg3IiwidCI6IjgyMWFmMGVjLTMxNDAtNDEzNy1hZjBlLTY2OTAyODNmYjY3MyJ9>.

[30] Reid and Triscari, 'Visualising'.

Legislative Council. However, party affiliation did not figure prominently in the Upper House until the 1940s and, more notably, after the abolition of the restricted franchise in 1950.

The *longue durée* presentation of data in the initial figures formed the basis for the paper analysis. It developed a historical periodisation similar to elsewhere without reference to other sources.[31] The first predates the data in the figures and constitutes a foundational or pre-party era commencing with separation from New South Wales in 1851. Victoria's origins as a settler colony allowed for the development of 'responsible government.'[32] Although no formal exclusion of the Indigenous population existed, in practice, the colony's representative institutions primarily reflected the will of the (predominantly male) European settler populations. The bicameral representative system emerged after 1856, with property qualifications for voting in the Assembly abolished in 1857.[33]

However, there was some controversy over the characterisation of the subsequent periods. The long reform period between the 1890s and the early 1950s entailed significant changes. These included:

- The abolition of separate representation for public servants and rail employees.

- Women obtained the right to vote through An Act to provide for Adult Suffrage of 1909.

- Preferential voting was introduced in the Legislative Assembly in 1911.

- Voting in the Legislative Assembly became compulsory in 1923.

- Women became eligible to stand for the Victorian Parliament in 1923.[34]

[31] Victorian Electoral Commission, 'History of Elections in Victoria'. Accessed at: <https://www.vec.vic.gov.au/voting/learn-to-vote/history-of-elections-in-victoria>.

[32] Wright, A People's Counsel, p.17.

[33] John Waugh, 'The Old Guard, 1855-1863', in Paul Strangio and Brian J. Costa (eds), *The Victorian Premiers, 1856-2006*. Sydney: Federation Press, 2006, pp. 12–29; Paul Strangio, 'Broken Heads and Flaming Houses: Graham Berry, the wild colonial', in Strangio and Costar (eds), *The Victorian Premiers*, pp. 51–74.

[34] Reid and Triscari, Visualising, pp. 9-11

The reform period had at least two distinct eras. The first of these commenced with the emergence of the Labor Party in the 1890s. The party's proportional vote and number of seats expanded consistently until the 1914-18 war (See Figures 1 and 2). One consequence was the cohering of a unified party of the centre-right in opposition to Labor. The 'fusion Liberals' emerged as a unified force after overcoming the divisions between protectionists and free traders.[35] However, the momentum surrounding Labor's rise had already begun to dissipate from its high point in 1911 by 1914. Labor's split over the war and conscription resulted in a contraction of Labor's vote between 1917 and 1920, from which it did not recover until between 1921 and 1927 (See Figures 1 and 2).[36]

These fluctuations in Labor support corresponded with the era's second main facet, the emergence of the Country Party (CP). Originating as a faction within the Liberals, the Victorian Farmers Union (CP after 1920) ran its first candidates in 1917. Although its vote subsequently fluctuated between 14 and 20 per cent of the electorate, electoral malapportionment helped it to obtain a disproportionately large proportion of seats (between 20 and over 37 per cent at its high point in 1943).[37] Of course, its status as a singular party often did not exist in practice, with at least two significant splits.
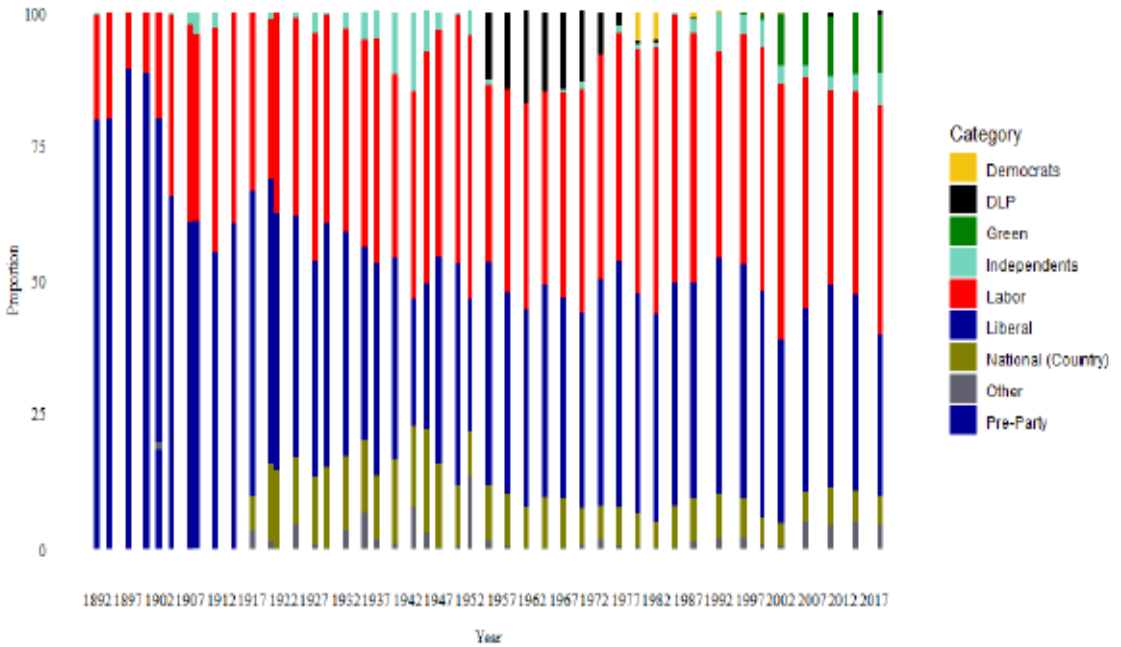
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[35] Charles Richardson, 'Fusion, the party system we had to have?' *Policy: A Journal of Public Policy and Ideas*, 25(1) 2009, pp. 13-19.

[36] Department of Veterans' Affairs, 'Conscription: Great Debates - Anzac Portal, Conscription: Great Debates.' Access at: <https://anzacportal.dva.gov.au/resources/conscription-great-debates>.

[37] Antony Lamb, *On Measures and Men: the Victorian Country Party, 1917 to 1945*. PhD Thesis, Swinburne University of Technology, 2009; Ben Reid, *Historical Malapportionment and Victoria's Legislative Assembly*. Parliamentary Library & Information Service, Parliament of Victoria, 2023.
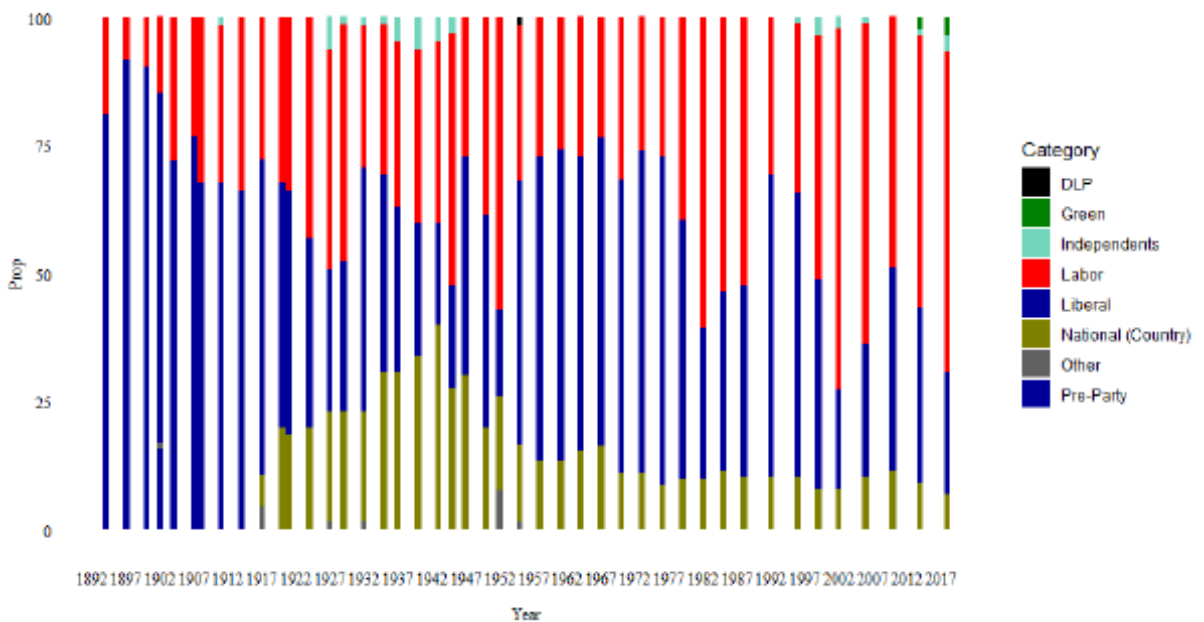
Figure 2.   Proportion of Legislative Assembly Vote by Party Category[38]

Figure 3.   Proportion of Legislative Assembly Seats by Party Category[39]

Tensions over the extent of malapportionment eventually led to divisions and splits within the CP and the United Australia Party/ Liberals. The Liberals' relationship with the CP was turbulent. They adopted the title Liberal and Country Party in 1948 to appeal to disillusioned former CP voters and MPs. The conflict eventually led to the Liberals adopting a 'two for one' electoral reform proposal in 1950. A split in the Liberal caucus resulted in a short-lived government led by Thomas Hollway, who founded the break-away Electoral Reform League.[40] The subsequent election resulted in the first Labor government with a majority of seats in the Legislative Assembly between 1952 and 1955.

In the meantime, legislation ending restrictions on the Legislative Council franchise was finally adopted in 1950.[41] The restricted franchise and slower adoption of party affiliation mean it is harder to assess the main trends in the vote distribution. There

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[39] Carr, 'Psephos'; UWA, 'List of all General Election results'. See also
<https://povresearch.blob.core.windows.net/2022/Election history/fig2.html>.

[40] Reid and Triscari, Visualising, p. 11.

[41] Reid, Historical malapportionment, p. 6.

were also recurrent high levels of malapportionment between provinces, with the smallest having just 13.7 per cent of voters compared to the largest in 1972.[42] Figures 3 and 4 outline the seat and vote distribution. Labor's share of the vote and seats remained low until after 1950, with non-party, Liberal and Country Party members having the most Members. Even in 1952, Labor fell short of winning a majority in the chamber. Labor's low representation, moreover, persisted across the next historical era.

A third era of gradual change ensued between 1955 and 1982.[43] Figures 1 and 2 suggest three main trends characterised the period. First, the Liberals governed the state across the entirety of these years. Although their primary vote share averaged below 40 per cent for most of these years, they obtained over 50 per cent of Legislative Assembly seats. Second, Labor's 'great split' profoundly impacted Victoria with the emergence of the Democratic Labour Party.[44] Although it never won any seats, it consistently secured 12-15 per cent support during the 1950s and 1960s. The ALP's support, on the other hand, fell below 40 per cent during these years. Third, each Premier's time in office expanded considerably with just three different leaders (Henry Bolte, Rupert Hamer and Lindsay Thompson) during these years.[45]

Having proposed and abandoned a commitment to substantive electoral reform between 1950 and 1955, the Liberal-led governments not surprisingly undertook few changes. A partial exception was the synchronisation of Legislative Council elections with those for the Lower House after 1961. They also increased the number of districts in 1965 and 1973 in line with population growth in the state.

Finally, a fourth era commenced in the early 1980s. Labor returned to office in 1982 and subsequently governed during all but 12 of the following 40 years.[46] The greater data availability and anticipated greater interest in the more recent era allowed for

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[42] Carr, Psephos.

[43] Reid and Triscari, Visualising, pp. 11-12.

[44] Paul Strangio, 'The Split: A Victorian Phenomenon'. in Brian J. Costar, Peter Love and Paul Strangio (eds) The Great Labor Schism: A retrospective. Carlton North: Scribe, 2005, pp. 23–45; Wright, A People's Counsel, p 192.

[45] Parliament of Victoria, 'People who shaped Parliament.' Accessed at: <https://www.parliament.vic.gov.au/about/history-and-heritage/people-who-shaped-parliament/>.

[46] Reid and Triscari, Visualising, pp. 13-18.

more detailed visualisation and analysis. There were also substantive reforms to the electoral system and both houses.[47]

The analysis deployed a range of visualisation and maps, allowing for a more in-depth representation of the electoral changes over time. As is often the case, the significant disparity between urban and regional seats tends to under-represent the degree of change.

As outlined above, the advantage of cartograms in figures 5 to 9 is that they symbolise each electorate. The downside is that while it is possible to preserve some aspects of the underlying geospatial features, the location of polygons can inevitably deviate from where a logical representation would otherwise be. For example, a seat in Melbourne's West, like Sunshine in 1982, appears near the South Australian border.

Labor's results in 1982 and 1992 are the first notable contrast. The predominance of red in the former captures the scale of its election win. Figures 1, 2 and 5 suggest that its 50 per cent of the primary vote allowed it to secure over 60 per cent of seats in the Legislative Assembly. While both its hold of seats and vote share declined over the next two elections, an opposite predominance of blue is evident in 1992 (Figure 6). Labor was, moreover, only able to obtain a majority in the Legislative Council temporarily in 1985 (see Figure 4). The problems and setbacks of the Cain and Kirner governments led to a revival of the Liberals' fortunes, allowing them to govern between 1992 and 1999. Labor's primary vote contracted to 38 per cent in 1992. Liberal and Nationals also increased their representation in the Legislative Council in 1996.

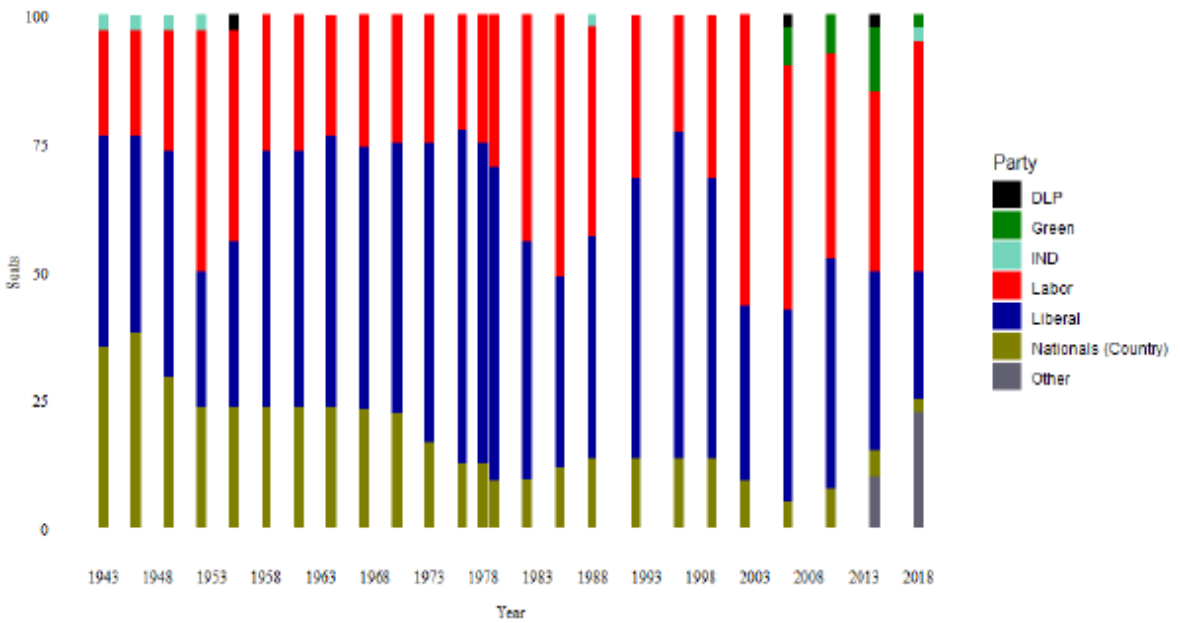[47] Wright, A People's Tribune, pp. 221-224.

Figure 4.   **Proportion of Legislative Council Votes by Party Category**[48]
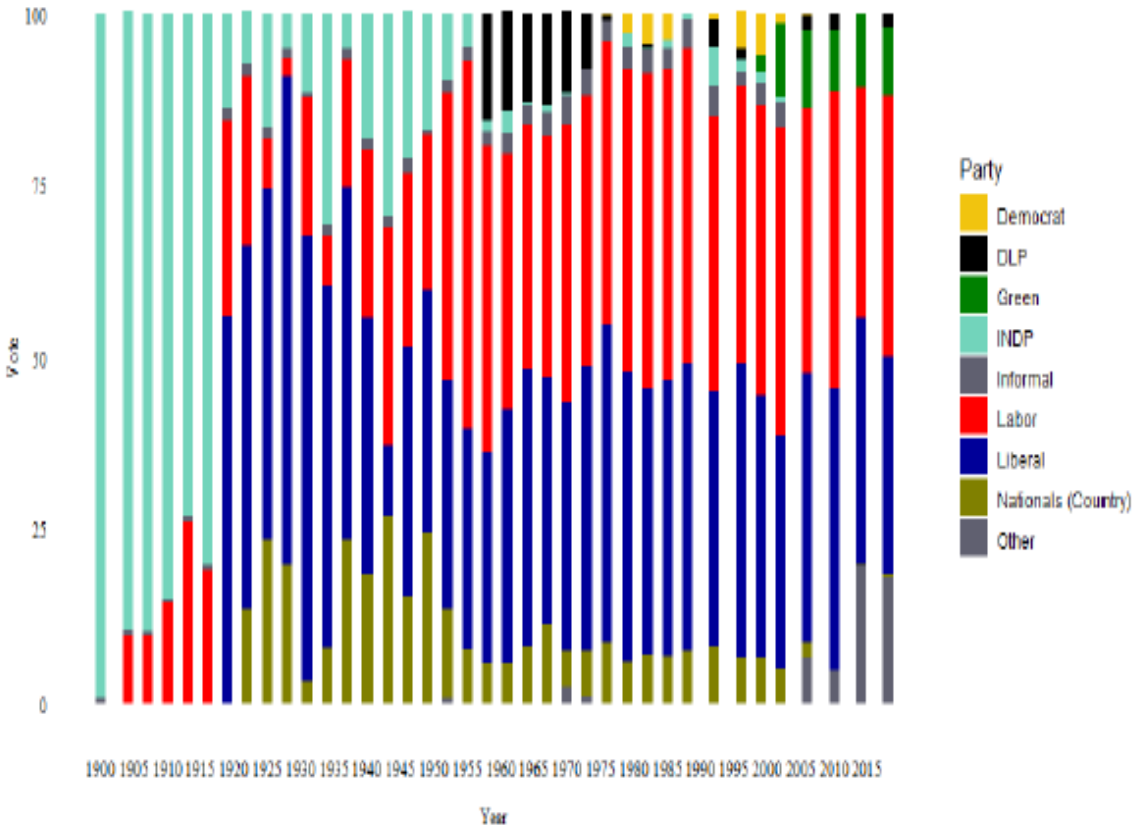
Figure 5.   Proportion of Legislative Council Seats by Party Category[49]

Figure 6.   Legislative Assembly Results by District, 1982[50]

Figure 5: Legislative Assembly Seats by Party 1982
Labor
Liberal
Nationals

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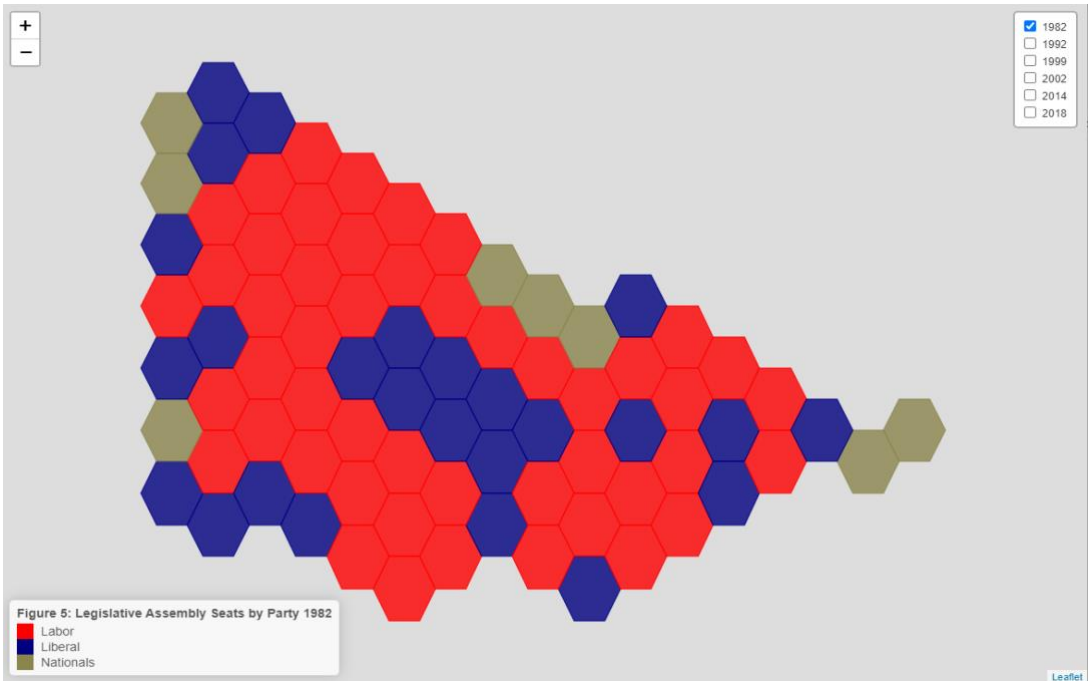
[50] Reid and Triscari, Visualising, pp. 14. See also
<https://povresearch.blob.core.windows.net/2022/Election%20history/fig5.html>.

Figure 7.   Legislative Assembly Results by District, 1992[51]
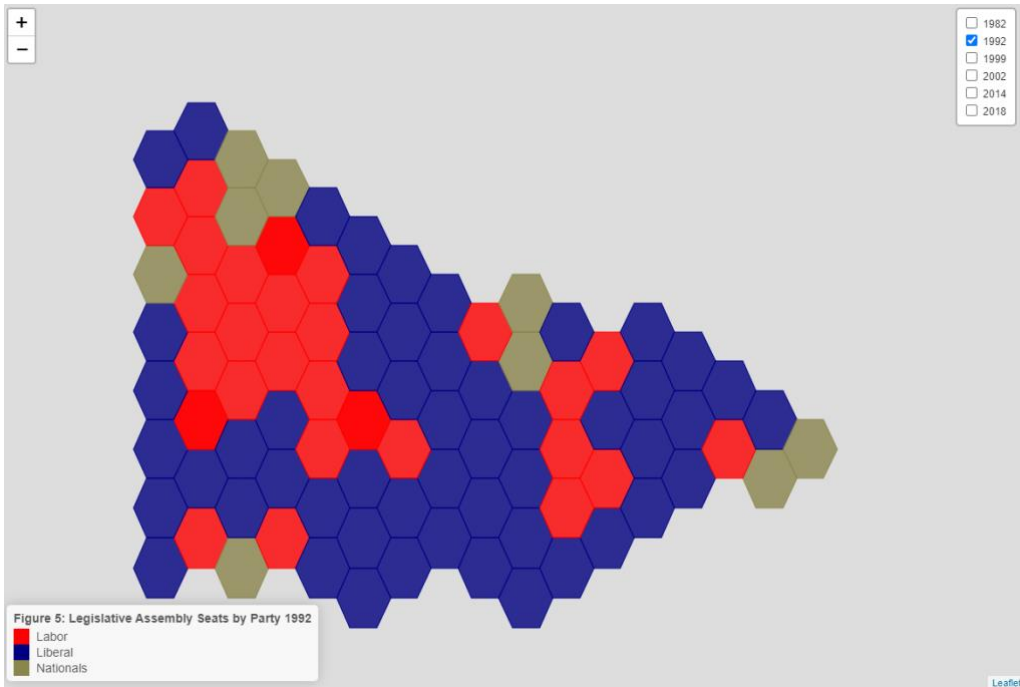
The subsequent years illustrate the switch back to Labor's predominance, starting with the close election result in 1999. Labor's primary vote recovered to almost 46, and its two-party preferred vote of 50.2 per cent allowed it to win just short of a majority of seats (Figures 1,2 and 7). It was able to govern with the support of three independent crossbenchers.[52] The 2002 election, however, resulted in a more decisive win for Labor, with a two-party preferred result of 57.8 per cent and 62 seats in the Legislative Assembly (Figure 8).

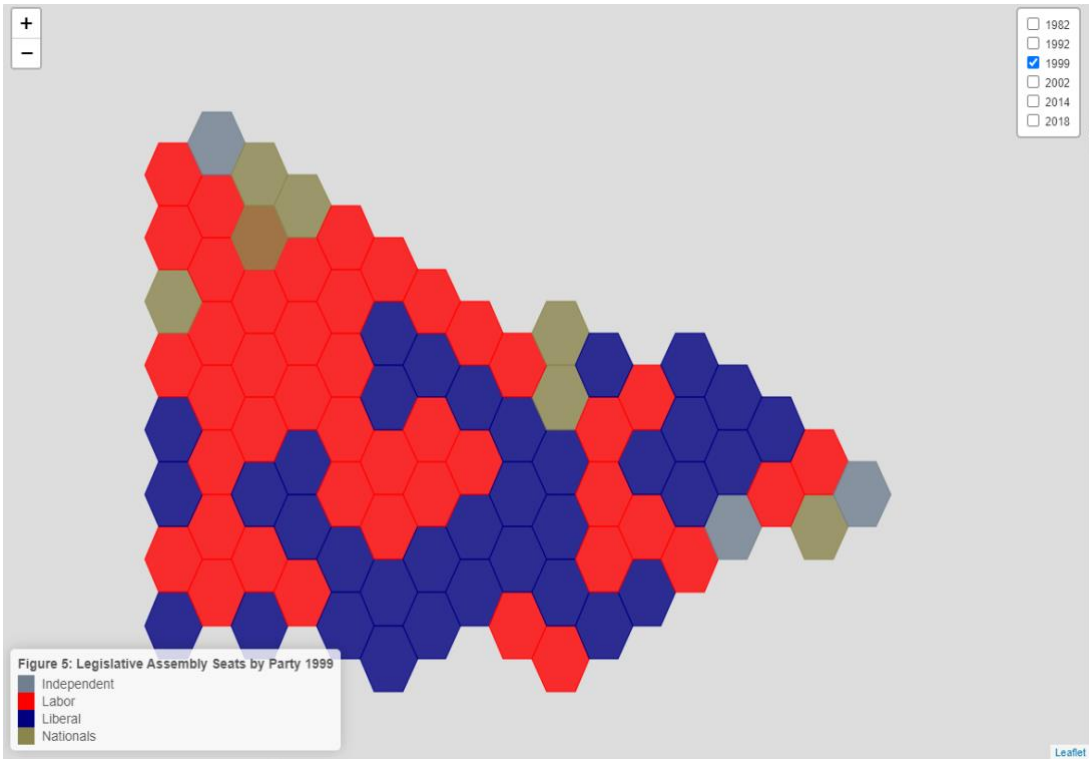[51] Reid and Triscari, Visualising, pp. 14. See also
<https://povresearch.blob.core.windows.net/2022/Election%20history/fig5.html>

[52] Susan Davies, 'Statement in Support of A Minority Labor Government.' Accessed at:
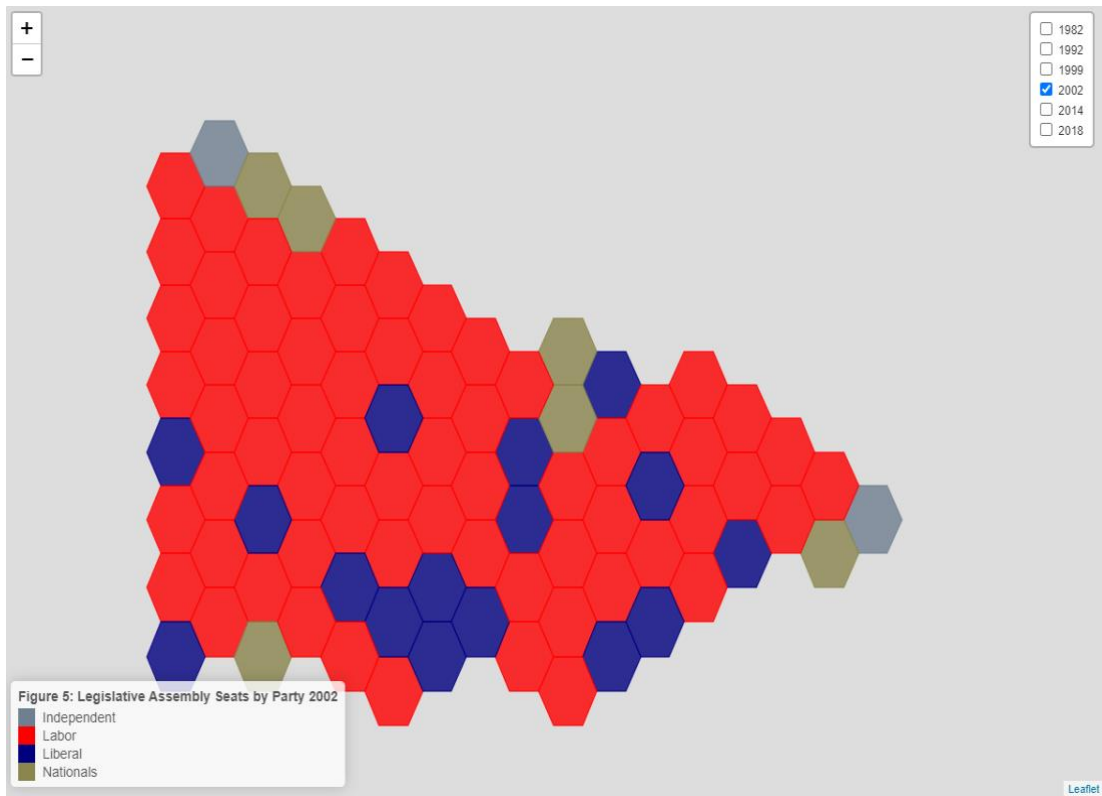<https://australianpolitics.com/1999/10/18/susan-davies-statement-on-minority-government.html>.

Figure 8.   Legislative Assembly Results by District, 1999[53]

Figure 5: Legislative Assembly Seats by Party 1999

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[53] Reid and Triscari, Visualising, pp. 14. See also
<https://povresearch.blob.core.windows.net/2022/Election%20history/fig5.html>.

Figure 9.   Legislative Assembly Results by District, 2002[54]

Figure 5: Legislative Assembly Seats by Party 2002
Independent
Labor
Liberal
Nationals
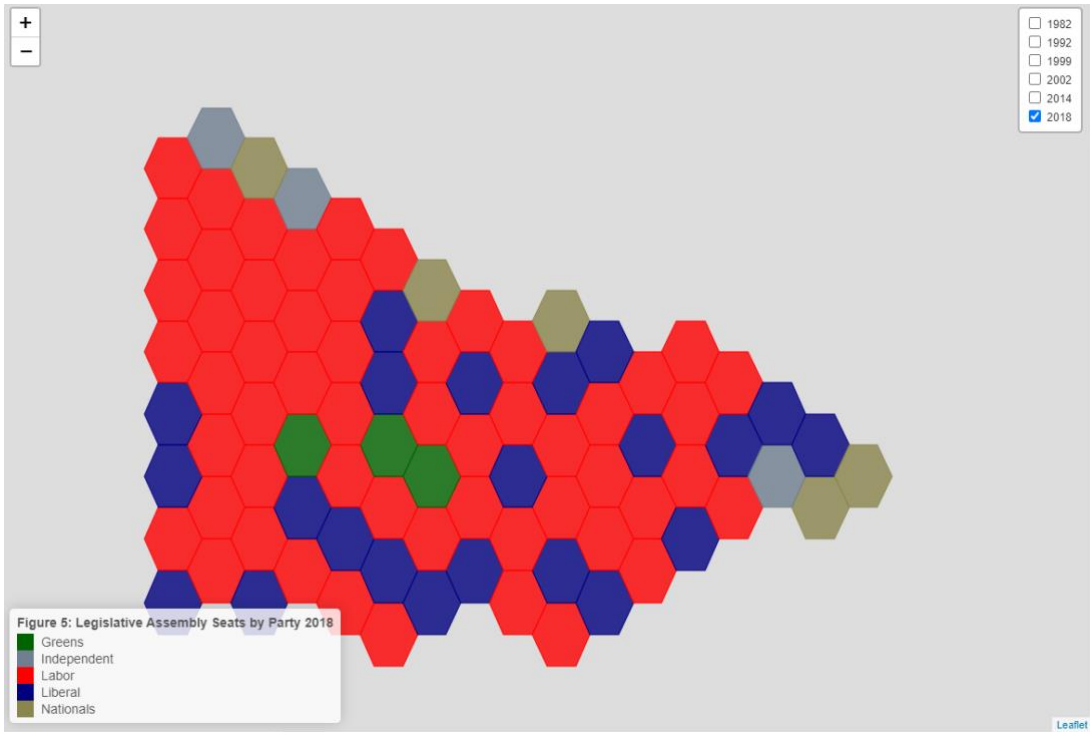
[54] Reid and Triscari, Visualising, pp. 14. See also
<https://povresearch.blob.core.windows.net/2022/Election%20history/fig5.html>.

Figure 10. Legislative Assembly Results by District, 2018[55]

Figure 5: Legislative Assembly Seats by Party 2018

- Greens
- Independent
- Labor
- Liberal
- Nationals

Having obtained a decisive majority in the Legislative Council for the first time, Labor was also finally able to enact reforms to the state's Legislative Council, having tried and been rebuffed by the opposition-controlled chamber in the 1980s.[56] In keeping with an agreement with the crossbench, it established a Constitutional Commission that recommended the introduction of proportional representation and a region-based system. The subsequent legislation passed in 2003 was arguably one of the most

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[55] Reid and Triscari, Visualising, pp. 14. See also
<https://povresearch.blob.core.windows.net/2022/Election%20history/fig5.html>.

[56] Nicholas Economou, 'Changing the Rules to Change the House: Electoral Reform and the 2006 Electoral Contest for the Victorian Legislative Council'. Australian Journal of Political Science 43(4), 2008, pp. 635–648; Alistair Harkness, 'Restraints upon the agenda: Policy-making in Victoria 1982-1992.' Australasian Parliamentary Review 27(1) 2012, pp. 134–149.

significant historical changes to the state's electoral system.[57] Figures 3 to 4 demonstrate the changes in the upper house's composition. In 1992, the Liberals and Nationals predominated in the chamber. The first election under the new system in 2006 resulted in Labor obtaining more seats than in earlier years. The Greens and Democratic Labour Party also won seats, reflecting the emergence of a crossbench.

The years since exhibited similar patterns of representation, except for when the Coalition returned to government between 2010 and 2014. Labor again returned to office in 2014 before increasing and holding on to its share of seats in 2018 and 2022. Although its representation declined in the Legislative Council, a substantial crossbench emerged.

LIMITATIONS AND FUTURE DIRECTIONS

While this project offers valuable new insights into the contested histories of electoral competition and political institutions in Victoria, there are limits to the above analysis, and these pose questions about the future of electoral, historical, and broader social science research in Australia. While data-based techniques provide avenues for different research approaches, there are still limits on available data sets.

As noted above, obtaining accurate data on Victoria's electoral history was challenging and could be even more so with other states. The UWA archive, as well as falling into disrepair, only provides summary data for each election.[58] Carr's presentation of the data in textual form also poses challenges. Even the most thorough use of regex code to extract numerical values from district and province details often contains errors and omissions. Minor inaccuracies also exist in the visualisations and data used in the original publication. The lowest resolution of results is district or province scale when polling place-level data exists for much of the period.

The further conversion of analogue data into accessible databases for further research and analysis would enable further research. The Victorian Parliamentary Library, for example, has bound and scanned editions of statistics relating to various Legislative

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[57] Constitution Commission of Victoria, *A House for Our Future: A report, Constitution Commission Victoria*, 2002; Government of Victoria, Constitution (Parliamentary Reform) Act 2003.

[58] UWA, List of all General Election results.

Council and Assembly elections from 1924 onwards.[59] Similar holdings no doubt exist in other states and nationally. Scans of these documents would ideally use high quality Optical Character Recognition processes. The data contains booth-level results that can be aggregated to district, province, and region levels. At the very least, it would be good to have state district and Commonwealth division-level results that are quality-assured and available as electronic datasets.

Comparable data collections exist in other countries and spheres. The United States maintains extensive data dating back to 1823 at the County level.[60] In Australia, similar projects are proceeding in fields like law. An Australian Research Council Linkage Infrastructure, Equipment and Facilities program funded the 'Digitising the Drafting of the Australian Constitution.' Its stated outcome is to 'provide an accessible means to decipher the proposals, drafts and votes by which the Constitution was formed. The project's expected outcomes are an open access, online archive that consolidates, corrects, and enhances the digital record of the Constitutional Conventions and the associated processes'.[61] A similar combination of interests – parliaments, universities and perhaps electoral authorities – could pursue a similar project. The goal would be an easily accessible data set and associated documents.

When combined with other data sets, fine-grained electoral statistics at the booth level could also generate more research. It would allow for a more detailed analysis of changes in electoral behaviour and its relationship to social, economic, and political processes. For instance, combining census collector district data with booth results could generate more profound insights into the 'social cleavages' underpinning voter

[59] Parliament of Victoria, *Legislative Assembly, Qualifications, disqualifications and enrolment of electors, postal voting, statistics: relating to the general election 1924-1936*, prepared by the Chief Electoral Officer for the State of Victoria, 2002; Parliament of Victoria, Legislative Assembly, Statistics relating to the general election held on 1937-1985: together with summary of provisions relating to qualifications and enrolment of electors, postal voting, absent voting, unenrolled voting prepared by the Chief Electoral Officer for the State of Victoria, Victoria, 2002.

[60] Inter-university Consortium for Political and Social Research, United States Historical Election Returns, 1824-1968, 1999.

[61] Australian Research Council, LE230100159 — The University of Western Australia, <https://dataportal.arc.gov.au/NCGP/Web/Grant/Grant/LE230100159>.

preferences and the impacts of shorter-run economic and social changes.[62] Both existing and future research can deepen understanding of electoral processes and history in Australia through a fresh lens of digitised data. The outcomes would be an enhanced understanding of electoral processes and administration and the social and geospatial trends associated with the historical evolution of election results.

DIGITISING ELECTORAL HISTORY

Parliamentary institutions face many challenges, with the need to engage and educate the public becoming an increasing priority.[63] One avenue to accomplish such goals is through original research and providing information and publications that engage with data. These methods can generate knowledge of and interest in historical and contemporary electoral systems.

Currently, materials available in Australia are patchy and vary in quality and depth. These often understandably focus on national-scale processes while neglecting the diverse experiences of different states and jurisdictions. One way state-based Parliaments and associated researchers can contribute to filling this void is through producing good quality and engaging materials using data analysis and visualisation-based approaches.

The Victorian Parliamentary Library produced material working with these approaches in the lead-up to the December 2022 election. It used data from the web and official sources to provide an overview of the history of electoral contests in the state. Using a range of data analysis tools and visualisation and geo-visualisation packages in R and Python, it presented an overview history with various illustrations of election results over time.

The opportunities presented by data analysis and visualisation-based approaches pose two further questions. On the one hand, more opportunities exist for research into and education about the evolution of Australia's political and electoral processes. There is

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[62] Sergio Fabbrini, 'Cleavages: Political', in Neil J. Smelser, Paul B. Baltes (eds), *International Encyclopedia of the Social and Behavioural Sciences*. 2001, pp. 1987-1990, Accessed at: <https://www.sciencedirect.com/science/article/abs/pii/B0080430767011098>.

[63] Leston-Bandeira, 'How public engagement has become a must' pp. 8-16; Lomp, 'Taking community engagement,' pp. 26-29.

potential to revisit some of the themes and arguments in the existing research using data to provide more rigorous social and geospatial analysis. The same tools can make the material more accessible to audiences and provide scope for more sophisticated computational and statistical analyses. There is more scope for national, state-based, and local electoral studies.

On the other hand, a lack of good quality data with more details on electoral results in Victoria and nationally (the most recent years notwithstanding) has outstripped the availability of computational tools and applications. There is some good summary data available electronically, although its management is falling into disrepair in some cases. More detailed information remains analogue or in collections, such as Adam Carr's. Given initiatives in other fields, there is potential for a combination of institutions to commit to a more systematic digitisation of electoral results records for various jurisdictions in Australia. The experiences and know-how would also potentially be transferable to other national contexts.