

RESEARCH REPORT

Suicide and political regime in New South Wales and Australia during the 20th century

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Study objective: Australia has had a two party parliamentary political system for most of the period since its Federation in 1901, dominated either by a social democratic (Labor) or a conservative ideological perspective. This paper investigates whether such political differences at Federal and State levels have influenced suicide rates in the state of New South Wales (NSW) for the period 1901–1998.

Design: Federal government type, NSW State government type, and combinations of both Federal and NSW State government type were examined. Poisson regression models were stratified by sex and controlled for the effects of age, annual change in gross domestic product, sedative availability, drought, and both world wars.

Results: When both Federal and NSW State governments were conservative the relative risk of suicide for NSW men was 1.17 ($p < 0.001$) and for women 1.40 ($p < 0.001$) compared with both governments being Labor (1.00). A statistically significant linear trend ($p < 0.001$) in suicide risk was evident across the continuum of Federal/State government combinations, from both Labor (lowest), to mixed (intermediate), to both conservative (highest).

Conclusion: Significantly higher suicide risk was associated with conservative government tenures compared with social democratic incumbents. Results are discussed in terms of the differences underpinning conservative and social democratic government programme ideology, and their relevance to Durkheim's theories of suicide, social regulation, and integration.

Many suicide studies have noted the influence of wider socioeconomic and environmental factors on population suicide rates, beginning with Durkheim's 19th century study of suicide in Europe.¹ Such factors include unemployment and low socioeconomic status,^{2–4} changes in economic activity,^{5–6} and labour force characteristics.⁷ Factors pertaining to access to means of suicide, for example prescription pharmaceuticals (sedatives),⁸ coal gas containing carbon monoxide,^{9–10} and firearms^{11–12} have been shown to be associated with changes in suicide rates. Also of relevance in terms of contextual determinants of suicide and interactions with other social and economic factors are climatological variables such as seasonality,^{13–15} precipitation and solar exposure,¹⁶ temperature and sunlight duration.^{17–19} More widely, the impact of economic, political, and environmental variables on general health and major cause mortality has been documented,^{20–25} and politically conservative, free market regimes have been shown to be associated with higher measures of deprivation,^{26–27} lower birth weight and higher infant mortality,²⁸ and lower life expectancy.²⁹ While a number of different studies have investigated associations between attempted suicide and political affiliation or the effects of elections,^{30–32} there are few studies specifically investigating the influence of political regimes on suicide.^{33–37}

In Australia and other Western countries a residue of traditional ideological difference remains between conservative versus social democratic conceptions of the role of government, which formerly was wider. Social democratic approaches have traditionally reflected at some level the interests of labour, specifically the trade union leadership, whereas conservative approaches have traditionally identified with capital, with concomitant emphasis on the free market and individual responsibility.³⁸ Such differences have decreased over recent decades, as exemplified by the rise of "New Labour" in the United Kingdom. Of interest is whether such political differences in governmental power have been reflected in historical patterns of suicide rates. Clearly,

Durkheim's notion of anomie (less connectedness or inclusiveness) is of relevance in these conceptions of government.¹

In Australia the effects of political events or regimes on suicide rates have remained largely unexplored. Accordingly, this paper investigates the association between the dominant political parties (and their combination) at Federal and State government levels and suicide mortality in New South Wales since Federation, a period spanning 1901 to 1998. The analysis adjusts for the differential pattern of suicide across age groups over time² and for the potentially confounding variables pertaining to wider social, economic, and seasonal trends such as annual changes in gross domestic product (GDP), world war, drought, and the availability of sedatives during the 1960s, variables that, from the studies quoted above, seem to relate to suicide variability. As drought in Australia has substantial and important effects on many primary industries that do not necessarily appear in GDP changes, its association with suicide is not merely climatological but also has economic relevance.

METHOD

Data

NSW suicide mortality data for the period 1901–1998 were obtained from Australian Bureau of Statistics (ABS) year books. Population denominator data were obtained from ABS census information, with inter-censal year populations estimated using weighted interpolation. Data were categorised into five year age groups from 15–19 years to ≥ 80 years. Given the variable classification protocols over time, biases may exist in Australian suicide data,³⁹ but it has been observed that the magnitude of such biases do not preclude the use of suicide data for aggregate or secular analyses.⁴⁰ Estimates of national GDP provided by Butlin⁴¹ were used to calculate the per cent annual GDP change for the period under investigation. Additional information on annual changes in GDP were obtained from the ABS for the period 1984–1998. Annual changes in

GDP were then grouped into five categories: negative GDP change of 10% or more, 5% and up to 10% negative change, between -5% and 5% change, between 5% and up to 10% positive change, and 10% or greater positive change. This economic variable was used to control for the year to year changes in national economic performance.

Occurrence of drought was taken from Bureau of Meteorology (BOM) data,⁴² based on the definition adopted by the BOM, and coded as a categorical variable. This variable was used to control for the possible influence of extreme climatological hardship especially in the earlier periods of the 20th century where economic and social stability was more dependent on agricultural enterprise. A similar method was used for the first and second world wars. The world war variables were modelled primarily to control for the artefactual drop in male suicide rates during the second world war when servicemen were not included in mortality data,⁴³ and for the real but unmeasured drops in suicide observed in civilian populations during both world wars. The availability of sedatives during 1960–1967 under the government subsidised Pharmaceutical Benefits Scheme, known to have affected Australian suicide rates (especially in women),⁸ was also included as a variable. Access to sedatives was restricted in 1967, which limited the number of tablets prescribed and the number of prescription repeats, after which decreases in suicide attributable to self poisoning were observed.⁸

Data on which political parties held power were obtained from Grattan⁴⁴ and coded into a categorical variable as either “Conservative” or “Labor”. In instances where governments changed mid-year, the party that had governed for the majority of the year was coded as the government for the whole year. Data on NSW governing parties were obtained from the NSW Parliamentary Library (1980) and coded similarly.⁴⁵ Combinations of Federal and State government type on NSW suicide mortality rates were also investigated. The resultant categorical variable comprised periods where Federal and NSW State government combinations were “Conservative/Conservative”, “Conservative/Labor”, “Labor/Conservative”, or “Labor/Labor”. As risk estimates in the two mixed categories were similar, these were aggregated for trend analysis.

Analysis

Data were analysed with regression models using a log link function with a Poisson error distribution. The following general model was defined and examined:

$$\ln\left(\frac{n_i}{p_i}\right) = \beta_1 age + \beta_2 \Delta GDP + \beta_3 drought + \beta_4 WW1 + \beta_5 WW2 + \beta_6 sedatives + \beta_7 govt + k$$

where n_i refers to the number of suicides for a given year, p_i the corresponding denominator population, $\beta_1 \dots \beta_7$ the relevant regression coefficients or estimates, with k as the constant. *Age* refers to five year age group, ΔGDP refers to percentage annual change in GDP, *drought* refers to drought occurrence as defined by the BOM, *WW1* and *WW2* refer to the first and second world wars respectively, and *sedatives* refers to increased sedative availability. The variable *govt* refers to the type of Federal or NSW State government, or to the various possible combinations of Federal and NSW State governments over the study period, as defined above. All variables are categorical. Separate models of Federal, State, and combinations of Federal and State governments were examined. Risk estimates were generated for each variable adjusting for age only to compare with the above models. The models were validated through investigation of sub-periods and sub-groups on a post hoc basis. This was to examine the possibility that any association found with a governmental regime was attributable to the

influence of, for example, the second world war artefact in men (lower suicide rates during a Labor government) or the sedative epidemic in the 1960s in women (higher suicide rates during a conservative government). Young, middle, and older age groups were also analysed separately, as were earlier and later periods of the century. Time series analysis was also conducted in relation to the identified socioeconomic and historical variables, defined as interventions where appropriate. Statistical analyses were conducted using SAS statistical software.⁴⁶

RESULTS

Tables 1, 2, and 3 show the extent of association of the type of Federal or NSW State government with NSW suicide mortality data for men and women adjusting for age only, and adjusting for age, annual changes in GDP, sedative availability, world war, and drought. As can be observed from table 1, after adjusting for all variables a significant positive association is evident between Federal conservative governments and increased suicide risk in NSW for men (RR=1.07, $p<0.01$), with a stronger association found in women (RR=1.22, $p<0.001$). The effects in both men and women were similar after controlling only for age. The effects of conservative NSW State governments (table 2) were also positively associated with increased risk of male suicide (RR=1.09, $p<0.001$) and female suicide (RR=1.17, $p<0.001$) in NSW, with the risk estimates being slightly lower for women than in the case of Federal conservative governments. And as was the case for the Federal analysis, these effects were similar to those found after adjusting for age only. The magnitude and statistical significance of the association between government type and suicide did not change after adjusting simultaneously for NSW State and Federal government type.

The effect of combinations of Federal and NSW State government on suicide risk is shown in table 3, with Labor in both Federal and NSW State governments as the referent group. As can be observed, when Federal and NSW State governments are both conservative, suicide risk is greatest. The relative risk for male suicide under a conservative Federal and State government was 1.17 ($p<0.001$). For women this estimate was 1.40 ($p<0.001$). Similarly significant results are evident when a NSW State Labor government coexists with a Conservative Federal government and vice versa, but the effect size is not as marked, with relative risks ranging from 1.07 ($p<0.05$) to 1.09 ($p<0.05$) for men, and 1.09 to 1.16 ($p<0.001$) for women.

Confounding variables were found also to be significantly associated with suicide. For men, relative risks associated with annual changes in GDP suggest an increased suicide risk with dramatic decreases in GDP, as shown by significantly higher relative risks for negative annual GDP changes of 10% or greater for Federal, State, and combined government models. For women, negative annual changes in GDP were not associated with increased suicide risk, but positive changes of greater than 5% were associated with increased female suicide risk for each model. Periods of drought were also associated with increased suicide risk, particularly in women. In both the Federal and combined models, a decreased suicide risk is also evident for women during the first world war period. Significantly lower suicide risks for both men and women were evident during the second world war.

Figure 1 shows the risk estimates for combinations of Federal and State governments, with discordant combinations (that is, conservative/non-conservative) collapsed into a single category as the relative risk estimates for the converse of these combinations were similar (see table 3). Figure 1 demonstrates a statistically significant increasing linear trend for both men and women when government combination is defined as an ordinal variable, with risk increasing monotonically from non-conservative to conservative government

Table 1 Influence of type of Federal government and other factors on suicide in NSW (1901–1998)

	Men				Women			
	Number of suicides	Rate/100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and all other variables	Number of suicides	Rate/100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and all other variables
Federal government								
Labor†	13667	23.85	1.00	1.00	4007	7.17	1.00	1.00
Conservative	19314	25.76	1.08***	1.07**	7083	9.03	1.26***	1.22***
% Annual change in GDP								
Minus 10%	529	14.27	1.44***	1.50***	106	34.47	1.01	1.24
Minus 5–9%	594	11.10	1.12*	1.13	142	26.81	0.93	1.03
Minus 4% to plus 4%†	5118	9.91	1.00	1.00	1475	23.94	1.00	1.00
Plus 5–9%	10344	10.60	1.07	1.03	3429	25.62	1.17***	1.08
Plus 10%	12568	9.91	1.00	0.96	4758	23.94	1.21***	1.22***
Drought								
No drought†	20639	24.17	1.00	1.00	6610	7.81	1.00	1.00
Drought	12342	24.17	1.00	1.07**	4480	8.98	1.15***	1.19***
First world war								
No war†	32107	24.45	1.00	1.00	10871	8.38	1.00	1.00
War	874	26.41	1.08	1.07	219	7.29	0.87	0.82*
Second world war								
No war†	31827	24.80	1.00	1.00	10654	8.42	1.00	1.00
War	1154	17.61	0.71***	0.70***	436	6.73	0.80	0.81**
Sedative epidemic								
No sedatives†	29720	24.17	1.00	1.00	9367	7.73	1.00	1.00
Sedatives	3261	28.04	1.16***	1.08*	1723	13.61	1.76***	1.55***

*p<0.05, **p<0.01, ***p<0.001. †Referent group.
RR = Relative Risk.

Table 2 Influence of type of State government and other factors on suicide in NSW (1901–1998)

	Men				Women			
	Number of suicides	Rate/100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and all other variables	Number of suicides	Rate/100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and all other variables
State government								
Labor†	18383	23.89	1.00	1.00	6088	8.06	1.00	1.00
Conservative	14598	26.51	1.11***	1.09***	5002	9.59	1.19***	1.17***
% Annual change in GDP								
Minus 10%	529	13.47	1.44***	1.36**	106	34.47	1.01	1.00
Minus 5–9%	594	10.90	1.12*	1.10	142	26.81	0.93	0.99
Minus 4% to plus 4%†	5118	9.91	1.00	1.00	1475	23.94	1.00	1.00
Plus 5–9%	10344	10.40	1.07	1.05	3429	25.62	1.17***	1.13**
Plus 10%	12568	9.61	1.00	0.97	4758	23.94	1.21***	1.24***
Drought								
No drought†	20639	24.17	1.00	1.00	6610	7.81	1.00	1.00
Drought	12342	24.17	1.00	1.00	4480	8.98	1.15***	1.04
First world war								
No war†	32107	24.45	1.00	1.00	10871	8.38	1.00	1.00
War	874	26.41	1.08	1.08	219	7.29	0.87	0.85
Second world war								
No war†	31827	24.80	1.00	1.00	10654	8.42	1.00	1.00
War	1154	18.35	0.71***	0.74***	436	6.73	0.80	0.90
Sedative epidemic								
No sedatives†	29720	24.17	1.00	1.00	9367	7.73	1.00	1.00
Sedatives	3261	27.31	1.16***	1.13***	1723	13.61	1.76***	1.74***

*p<0.05, **p<0.01, ***p<0.001. †Referent group.
RR = Relative Risk.

groupings (table 4). In the fully adjusted models, suicide risk increases an average 9% for men and 20% for women across each category.

Further subgroup analyses were undertaken for broad age groups and periods to determine if differences existed in the association between suicide and government regime. Furthermore, analyses were conducted that excluded periods with known artefactual or real impacts on suicide as an additional control for confounding. Analyses of sub-periods revealed that the increased risk of suicide associated with conservative governments differed in magnitude over the study period, with the relative risks associated with conservative governments

compared with social democratic governments being higher in the post-second world war period than in the pre-second world war period. Significantly higher relative risk estimates for conservative governments remained when the analysis excluded the second world war period that is affected by the lower suicide artefact in men, coinciding with a period of Labor government. A similar analysis excluding the period of the sedative epidemic, a period that coincided with a conservative government, also resulted in significantly higher suicide risk under conservative governments.

Stratified analyses by broad age group (15–24, 25–59, ≥60 years) were conducted to examine whether the association of

Table 3 Influence of type of Federal/State government combination and other factors on suicide in NSW (1901–1998)

	Men				Women			
	Number of suicides	Rate/ 100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and all other variables	Number of suicides	Rate/ 100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and all other variables
Federal/State govt combination								
Labor/Labor†	7391	23.02	1.00	1.00	2121	7.00	1.00	1.00
Labor/Conservative	6276	26.71	1.16***	1.09*	1886	7.84	1.12*	1.09
Conservative/Labor	10992	25.78	1.12***	1.07*	3967	8.47	1.21***	1.16***
Conservative/Conservative	8322	28.32	1.23***	1.17***	3116	10.78	1.54***	1.40***
% Annual change in GDP								
Minus 10%	529	14.27	1.44***	1.43***	106	34.47	1.01	1.16
Minus 5–9%	594	11.10	1.12*	1.12	142	26.81	0.93	0.98
Minus 4% to plus 4%†	5118	9.91	1.00	1.00	1475	23.94	1.00	1.00
Plus 5–9%	10344	10.60	1.07	1.04	3429	25.62	1.17***	1.10*
Plus 10%	12568	9.91	1.00	0.97	4758	23.94	1.21***	1.23***
Drought								
No drought†	20639	24.17	1.00	1.00	6610	7.81	1.00	1.00
Drought	12342	24.17	1.00	1.03	4480	8.98	1.15***	1.12***
First world war								
No war†	32107	24.45	1.00	1.00	10871	8.38	1.00	1.00
War	874	26.41	1.08	1.07	219	7.29	0.87	0.81*
Second world war								
No war†	31827	24.80	1.00	1.00	10654	8.42	1.00	1.00
War	1154	17.61	0.71***	0.73***	436	6.73	0.80	0.86*
Sedative epidemic								
No sedatives†	29720	24.17	1.00	1.00	9367	7.73	1.00	1.00
Sedatives	3261	28.04	1.16***	1.09*	1723	13.61	1.76***	1.56***

*p<0.05, **p<0.01, ***p<0.001. †Referent group.
RR = Relative Risk.

Table 4 The effect of Federal/State government combinations on male and female suicide risk in NSW (1901–1998)

	Men				Women			
	Number of suicides	Rate/ 100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and other variables	Number of suicides	Rate/ 100000 adjusted for age only	RR adjusted for age only	RR adjusted for age and other variables
Federal/State govt combination								
Both Labor†	7391	23.02	1.00	1.00	2121	7.00	1.00	1.00
Mixed	17268	26.01	1.13***	1.08**	5853	8.26	1.18***	1.14***
Both conservative	8322	28.32	1.23***	1.17***	3116	10.78	1.54***	1.40***
Linear trend			p<0.001	p<0.001			p<0.001	p<0.001

*p<0.05, **p<0.01, ***p<0.001. †Referent group.

conservative governments with higher rates of suicide differed by age. These analyses revealed the increased relative risk estimates of suicide associated with conservative governments to occur in both middle and older age groups, men and women,

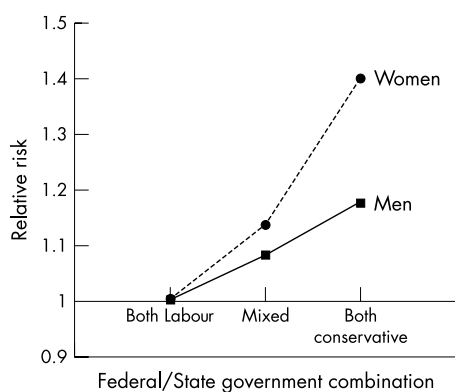


Figure 1 Effect of Federal/State government combinations on male and female suicide risk in NSW, 1901–1998. Adjusted for age, annual change in GDP (%), drought, first world war, second world war, and sedative epidemic.

while the association was lower and not statistically significant in the younger age group.

The positive association between drought occurrence and suicide remained significant for both men and women after conducting interrupted time series analysis. Results of time series analysis also indicated an association with the major decrease in male suicide during the second world war period, and the increase in female suicide during the 1960s attributable to sedative availability, with the respective suicide risk estimates being in the appropriate direction (that is, negative for the second world war decrease in male suicide, and positive for the increase in women during the sedative epidemic). However, these latter estimates were not statistically significant. Interrupted time series analysis indicated a positive relation between suicide and conservative government combinations, but this was not statistically significant.

DISCUSSION

The results of Poisson regression modelling of suicide in NSW controlled for the effects of age, annual changes in GDP, world war, drought, and sedative availability showed significant positive associations between conservative governments and higher suicide rates for the period 1901–1998. Of particular note are the higher relative risk estimates for NSW women

during conservative governments, which were highest when both Federal and NSW State governments were conservative. Aside from the sedative epidemic of 1961–1967, very few social or economic factors have hitherto been found to be associated with female suicide variability in Australia. A combination of a conservative Federal government with a Labor State government, and vice versa, also was significantly associated with increased suicide risk in NSW women, but the association was not as great as when both governments were conservative. Consequently a significant increasing monotonic “dose-response” trend was evident from non-conservative Federal and NSW State governments (lowest RR) through conservative Federal and non-conservative NSW State governments (and vice versa), to conservative Federal and NSW State governments.

These findings do not seem to be artefactual given that the models controlled for identified ecological risk factors for suicide. Importantly, a consistent dose-response relation emerged. The models correctly identified known factors associated with suicide rate changes, particularly the artefactual decrease in male suicide during the second world war and the increase in female suicide during the 1960s sedative epidemic. The positive association between suicide risk and conservative governments also remained after analyses excluded the periods where conservative and Labor governments coincided with observed suicide increases and decreases known to be associated with other factors. The positive association between conservative governments and increased suicide risk was also evident when pre-second world war and post-second world war periods were examined separately, and when age specific analyses were carried out. In short, the trend of increasing suicide risk from Labor to conservative government categories remained after adjusting for identified ecological confounding.

This study investigates the association between suicide in NSW and Federal and NSW State political regimes over an extended period in terms of their broad ideological underpinnings. Previous investigations of suicidal behaviour and politics have focused on the possible association with general elections in the United States and United Kingdom,^{30–32} and also the association of a single significant sociopolitical event with suicide.^{33–37} Masterton and Platt³⁰ investigated parasuicide over a 20 year period in Scotland in relation to general election results, and found increased incidence of parasuicide in the period after Conservative electoral victories but not Labour electoral victories. No association between suicide and presidential elections in the United States has been found.^{31–32} Of more relevance to the current findings are a series of studies investigating suicide in the former Soviet Union.^{33–37} Changes to the political regime during the period of *perestroika* between 1984–1990 saw significant decreases in the suicide rate (32% and 18% for men and women respectively). These decreases have been attributed in part to democratic political reforms coupled with a sense of optimism and hope of improved living conditions, but also coincided with a strict anti-alcohol policy.³⁵ Since then, when illusions in the “magic of the market” were destroyed, suicide rates in the former Soviet Union and Eastern Europe increased again and remain the highest in the world.⁴⁷

The results of this study suggest that government programmes or perceived prospects under particular governments may be influential to some extent despite broader economic and historical trends that may also be associated with population suicide rates. For example, decreases in GDP are associated with increased male suicide, but increases in GDP were not as strongly associated with commensurate decreases in male suicide.

The effect of the political variables may indicate the more subtle influences of political programmes on wider socioeconomic trends, but could also be bound up in the inherent autoregressive process of what is a relatively long time series

Key points

- Conservative governments at both NSW (State) and Federal level associated with significantly higher suicide rates.
- Significant suicide risk dose-response relation with NSW-Federal governments, from both Labor (lowest), to mixed (middle), to both Conservative (highest).
- Differences underpinning conservative and social democratic government programmes discussed in terms of Durkheim’s notion of “anomie”.

of suicide rates. Interrupted time series analysis revealed that the effect of government type was positively associated with suicide in men and women, but this was statistically non-significant. However, while the positive association between suicide and the 1960s sedative epidemic was found to be significant in time series analysis of female suicide by poisoning only, the negative association between suicide and the large artefactual decrease during the second world war in male suicide was found to be non-significant despite the association being in the hypothesised direction. Given that both these large effects have been documented as robust, the problem may lie in correctly specifying the onset of the intervention as it actually occurred when conducting time series analysis. While the second world war can be clearly delineated as a “step function” intervention, its actual operation on suicide rates was more gradual in that increasing and then decreasing proportions of the male population were drafted into the armed forces during the course of the second world war. While this example illustrates the inherent difficulty in correctly specifying a hypothesised mechanism of intervention (and hence its “shape”), this is simple compared with characterising the mechanics of an “intervention” due to a political regime. The introduction of different major programmes would need to be assessed in their impact on some population characteristic and correlated with annual suicide data. While such characterisation is beyond the scope of this paper, it would be of interest to examine the correlation of a well characterised social programme intervention with suicide rates.

The positive association between drought occurrence and suicide may be more a reflection of the impact of the announcement of drought itself, and can perhaps more appropriately be conceptualised as a step function. Other climatological variables such as seasonality, precipitation and temperature, potential confounders not included in this study, may also reveal more subtle interactions between secular trends in these variables and suicide rates. However, seasonal variation in suicide occurs within a year, while suicide data over long periods are available only on an annual basis, precluding seasonal analysis.

The relation between suicide rates and political regime is reported here because of the agreement in the magnitude and direction of effects in both Poisson regression and time series analysis despite this not attaining statistical significance in time series analysis when regime was specified as a simple step function. That is, there seems to be evidence of an effect on suicide rates attributable to political regime in NSW and Australia but sufficiently characterising the form of the intervention for more rigorous analysis is not yet possible.

In Australia the ideological distinction between conservative and Labor politics historically has not been extensive and has decreased over the past two decades. Yet the differences in programme formulation and implementation in practice nevertheless may make a difference to people’s perceived prospects. Conservative ideology traditionally is less interventionist and more market orientated than that of a social democratic ideology. From a Durkheimian perspective, increased anomie (decreased connectedness or inclusiveness), is

thereby more strongly associated with conservative ideology. Such ideological differences may be reflected in social programmes implemented, with Labor governments traditionally implementing more regulatory programmes pertaining to, for example, employment, health, and education.⁴⁸ This was made easier in the second half of the century by constitutional changes made under the Chifley government, which enabled greater Federal intervention in areas such as social services.⁴⁹ Conservative government programmes reflect more a willingness to subsidise existing private sector services (for example, health, education, employment) than extend the responsibilities of the state.⁵⁰ Revived, particularly in the post-second world war era, has been the “rhetoric of individualism (the Victorian virtues of self help and thrift, to which might well be added the other three, abstinence, piety and respectability)”.⁴⁸

Given the ecological nature of this study, other intermediary variables not included such as individual (for example, mental illness) and interpersonal (for example, degree of isolation) factors, may further explain the relation between suicide rates and political regimes. However, population prevalences of intermediary variables between broad social indicators and the individual decision to commit suicide generally are not known, and certainly not known over any significant time span. Where such individual data are available multilevel statistical models that adjust for the “random” and “fixed” effects of individual or interpersonal factors are the most appropriate method (factors such as age and individual SES nested within broader social determinants such as area based SES).^{51–52} This study included only age and sex as “individual” level variables, with suicide and population data aggregated to five year age groups included in separate models by sex largely to adjust for differential age effects over time. Cross level (ecological) bias can arise as a consequence of effect modification or covariate misspecification, particularly in mixed models that infer individual level characteristics from group level characteristics and vice versa.^{53–54} However, the current analyses are “unmixed” in nature⁵⁴ and are interpreted in the context of population level characteristics. Although there may have been characteristics of periods associated with political tenure that are determinants of suicide not adjusted for in the models (unmeasured confounders), the replication of results at Federal and State levels, and the dose-response demonstrated, suggest a true association of suicide with political tenure.

At an individual level, personal factors will overwhelmingly influence an individual decision to commit suicide. Personal factors such as a history of mental illness,⁵⁵ previous suicide attempts,^{56–58} feelings of hopelessness and aggression,^{57–58} and familial and/or marital discord⁵⁹ have all been shown to be significantly associated with a higher risk of suicide or attempted suicide. Such factors will contribute to the likelihood of a suicide, but the context for these individual influences and risk factors cannot be ignored either. If social factors can interact with and mediate biological and cognitive substrates of individual behaviour, then they can act independently as determinants of health and wellbeing.⁶⁰ Under favourable social and economic conditions an individual with risk factors for suicide is less likely to decide to commit suicide than under conditions where life prospects are bleak or uncertain. This is because an individual suicide is the result of a decision to do so, which in turn is the outcome of a cognitive process, as impaired as it might be, in which life’s prospects are a major part of the decision equation. If life is not worth living it is because there is nothing to live for. This notion is also supported by studies of attempted suicide in which depression on its own has been found to be a poor predictor of suicide, as has hopelessness, but depression and hopelessness together were found to be significantly

predictive of suicidal behaviour.^{61–63} That is, if hopelessness is a necessary but not sufficient condition for suicide, then regimes that offer less hope to the bulk of the population will also increase the probability of suicide in groups that have pre-existing or newly acquired risk factors for suicide.

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