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Can Social Media Predict Election Results?
Evidence from New Zealand

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Abstract

The importance of social media for election campaigning has received a lot of attention recently. Using data from the 2011 New Zealand General Election and the size of candidates' social media networks on Facebook and Twitter, we investigate whether social media is associated with election votes and probability of election success. Overall, our results suggest that there is a statistically significant relationship between the size of online social networks and election voting and election results. However, the size of the effect is small and it appears that social media presence will therefore only make a difference in closely contested elections.

Keywords

social media
elections
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JEL Classification

D72, L82

1. Introduction

The development of increasingly sophisticated media technologies has meant that communication within political campaigns has increasingly become 'multi-faceted' and 'multi-modal' (Lassen and Brown 2011). Social networking sites, and in particular Facebook and Twitter, are increasingly being used by political parties and electorate candidates in election campaigns to connect with voters. Facebook and Twitter are currently the most used social networking sites in New Zealand (Alexa 2012) and in the 2011 general election more candidates used them as a mechanism to provide information and engage with potential supporters. Internet use in campaigns is evolving and each election sees it employed in new ways to communicate with target audiences. This leads to questions about the impact of these platforms for communication on voting behaviour and election outcomes. Is a high level of online interest indicative of wider electoral support? The purpose of this paper is to examine this relationship within the context of the 2011 New Zealand general election by analysing whether the number of online followers of electorate candidates on Facebook and Twitter is indicative of electorate seat results.

In pursuing elected office, political candidates are likely to exploit any opportunity to facilitate making contact with voters to raise their profile, make known their position on key issues, and claim recognition for policy successes (Lassen and Brown 2011). Campaigns are essentially about making contact with voters, sharing information with them in an attempt to influence the way they vote, and actually getting them to vote (Towner and Dulio 2012). The internet is changing the way this contact occurs. Its rapid growth has been characterised by the development of new dimensions and capabilities, and these capabilities are framing new forms of political communication and campaigning. In a relatively short period of time, the internet has become integrated into the way citizens lead their daily lives, and increasingly voters are going online to find information about candidates and election issues. The internet therefore provides a low-cost way of communicating with constituents, supporters and potential voters. While traditional media and campaign strategies have in no way been replaced, they are being added to and overlaid with new internet-based forms of communication. Politicians have, therefore, been attracted into using these new media as potentially effective vehicles for communication with supporters, and social networking media, in particular, is the most recent advancement which is shaping campaign activity.

As of September 2012, Facebook had over 1.01 billion active users (Alexa 2012). As more of the world becomes connected through social networking sites, politicians are increasingly taking advantage of the opportunities of this technology to make a direct connection with voters. Facebook and Twitter provide opportunities for unmediated direct communication with supporters and potential voters, opportunities that in the past have been limited to paid advertising or personal visits. On Facebook, political candidates can set up a profile – other Facebook users can then 'friend' the candidate in order to follow updates and receive messages from them. On Twitter, political candidates can set up an account – other

Twitter users can then 'follow' the candidate, where they receive short messages ('tweets') from the candidate. They can pass those messages onto other users ('re-tweets').

These new forms of communication potentially allow politicians much greater control over the flow of information. It is apparent, however, that political parties and electorate candidates are still coming to grips with the opportunities for election campaigning the internet provides. Moreover, questions still remain about the links between social networking sites and election results. What, then, are the links between political information made available through social networking sites and the voting choices of citizens, and does an online presence and a social media strategy matter? Is online activity an indicator of support? Does it influence election results? Answering these questions and having an understanding of how social networking websites affect campaign effectiveness and the outcome of elections is useful in itself, and will also have the potential to inform election campaign strategies.

2. Background

The relationship between indications of online support for candidates and election outcomes needs to be studied as one part of a broader and complex range of determinants of election outcomes. We know that election outcomes are linked in important ways to, first, the activities of political parties in terms of 'policies, branding, activities, personalities and image… and, second, cleavages within society' (Jackson, 2011 p.230). Campaigns and candidate activity to promote policies, develop a party brand, and make known the personalities involved are also recognised as making a difference. Winning in elections is complex, but a number of factors are known to be associated with success. One of these is the 'incumbency effect' (Krasno 1994; Kendall and Rekkas 2012), through which:

> 'the constituency activity of the sitting MP may influence the voting behaviour of some constituents. This activity may lead to tangible benefits that can assist individual MPs in preparing for an election, such as raising their profile or building up their local network of activists needed for a well organised election campaign machine' (Jackson 2011, p.231).

Incumbents are better placed to sustain a permanent election campaign and as a part of this, the internet can be a useful tool for information sharing and network development.

The ability of candidates to build the necessary social networks to sustain the campaign through to victory is also recognised as making a difference. Barack Obama's successful presidential campaigns of 2008 and 2012, and in particular the way online activity was translated into effective on-the-ground activism, have drawn attention to the way social media tools can be employed to engage supporters and persuade voters (Cogburn and Espinoza-Vasquez 2011). Activities include internet banner advertising and YouTube broadcasts and messages (Jarvis 2010). The Obama campaigns also used the technology effectively for campaign fundraising (Jarvis 2010; Daniel 2010; Túñez and Sixto 2011; Wills and Reeves 2009). These historic campaigns have demonstrated how influential and powerful

the internet, and more specifically social media, can be in targeting certain groups with election information and in reaching potential voters.

An important outcome was what pundits have referred to as Obama's strong 'ground game' and associated activities of 'getting out the vote', that led to increases in the participation of groups with historically lower rates of voter turnout. What was achieved through the use of Facebook and Twitter was a type of social movement of grassroots volunteers. This suggests that as a communication tool, the potential of the internet is more than simply that of information sharing and fund raising, but also of mobilisation. The Obama campaign illustrates the power of these online social media to build networks that Cogburn and Espinoza-Vasques (2011 p.193) characterise as social capital: 'commitment to a community and the ability to mobilise collective actions.' Such campaign strategies are now routinely employed, with various outcomes, in England, Canada, Australia and Spain. There is thus a growing body of research examining the relationship between social networking sites and elections (see for example Ward, 2008; Langlois et al. 2009; Wills and Reeves, 2009; Túñez and Sixto, 2011), and sharply contrasting views on the impact of such media on actual election results (see, for example, Goldstein and Rainey 2010; Carr 2010).

Quantitative examinations of the relationship between online social media activity and election results are just beginning to be carried out. Analyses of the relationship between use of social media and election results have led some to the conclusion that such activity might have been able to inform accurate electoral predictions. For instance, Williams and Gulati (2008) used Facebook data in multivariate OLS models of vote share, and found that 'relative Facebook strength in state' was a significant predictor of the 2008 U.S. presidential nomination contests. Tumasjan et al. (2011) analysed over 100,000 Twitter messages containing a reference to a political party or a politician prior to the 2009 German national election. They showed that the percentage of Twitter tweets that mention a certain political party was closely correlated with the party vote share. The average prediction error of this method was 1.65%, which was comparable to various election polls. Metaxas et al. (2011) attempted to predict the 2010 U.S. Senate special election in Massachusetts using a similar method, but also by categorising tweets as positive or negative depending on what the tweet actually said with regards to the candidate in question. The latter method predicted the right candidate to win and only gave an error of 1.1%. Following this interesting result, they applied both methods to five other highly contested senate elections in the US that year. Overall, they found that both methods correctly predicted half of the six election results, but that only one election result was correctly predicted by both methods. They concluded that the errors (mean average error of 17.1% using only Twitter volume, and 7.6% using sentiments) were unacceptably high and that 'social media did only slightly better than chance in predicting election results' (Metaxas et al., 2011, p.7). Livne et al. (2011) analysed over 460,000 tweets to predict the result of the 2010 U.S. midterm elections, with an accuracy of 88%. They constructed logistic regression models where the dependant variable was the binary result of the election outcome, indicating whether the candidate won or not,

and the explanatory variables included the number of tweets, 're-tweets' and replies from a candidate per day. However, the quantity-based measures of Twitter use were all individually insignificant in their model. Furthermore, by omitting the Twitter-related variables entirely, the accuracy of the model only fell by 7 percentage points, which could indicate that it was not the Twitter data that gave the model its accuracy, but rather the other variables that were included.

There are important methodological issues related to the meaning of the data when considering the usefulness of online activity associated with Facebook and Twitter and election outcomes. Langlois et al. (2009) have challenged the viability of using social media in this way, pointing to the technical difficulties in tracking information on private online spaces. This problem is not just with finding the relevant information, but understanding what the information means. They explain that 'the challenges primarily lie in understanding the uniqueness of social networking sites as assemblages where software processes, patterns of information circulation, communicative practices, social practices, and political contexts are articulated with and redefined by each other in complex ways' (Langlois et al. 2009, p.416). This means that while some data may be measurable, analysts may not understand the meaning of the data. Wills and Reeves (2009) argue that becoming a 'friend' with someone on Facebook is very different friendship outside social networking; it merely represents the willingness to accept the request to be linked. Thus, the actual meaning of the number of 'friends' one has on Facebook may not necessarily indicate the amount of support that each political candidate has, and is perhaps more likely to mirror the willingness and effort of that candidate to make themselves known.

Against this background our study considers publicly available information about Facebook and Twitter activity associated with the 2011 New Zealand general election, which occurred on 26 November 2011. New Zealand general elections occur every three years, and operate using a Mixed Member Proportional electoral system. Each voter has two votes – one for an electorate seat, and one 'party vote'. Parliament is composed of 'electorate MPs' (each representing one electorate) and 'list MPs'. List MPs are drawn from an ordinal party list in order to ensure that the proportion of total MPs from each party matches the proportion of party votes that party received. Our paper considers votes for electorate candidates including the seven Māori electorates.

3. Data and Methods

In this paper, we measure the amount of support an electorate candidate has on Facebook and Twitter using the number of 'friends' a candidate has on Facebook, and the number of 'followers' they have on Twitter. These two counts each represent is the number of people who are willing to receive messages from the respective candidates. Candidates were identified manually via the websites of the major political parties, and the search function on Facebook and Twitter search function. When the candidates were searched for manually

using the Facebook and Twitter search functions, only accounts that matched both the candidates name and had some connection to the 2011 Elections or the candidate's political party were included; it was not sufficient for an account to match in name only.

The numbers of friends and followers were collected two months before Election Day (26 September), one month before (26 October), one week before (19 November) and on Election Day (26 November). Data collection at multiple points in time ensures that both the absolute number of friends and followers could be analysed, as well as the change in the number of friends and followers in the lead-up to Election Day. Data collection on Election Day was hampered by election rules that prohibit campaigning on Election Day itself. Thus, many candidates had disabled their Facebook and Twitter accounts. To resolve this problem, the data was collected either on Election Day or the day following. Also, the official nomination day for the 2011 Elections was 1 November 2011, which meant the official candidate list was not available for the first two data collection dates; however, candidates for the major parties were all determined well in advance of nomination day. Finally, there was one outlier in the Twitter dataset – the incumbent Prime Minister had more than five times as many followers as any other candidate. While a case could be made for excluding this outlier, we found that this actually reduced the predictive power of the Twitter models and have chosen to leave this data point in the dataset.

In total, 453 candidates ran in the 2011 Election. Of those, 59 percent were registered on Facebook and 28 percent were registered on Twitter. However, of the 59 percent registered on Facebook, 14 percent had a Facebook 'page' rather than a full Facebook account, which prevented people from 'friending' them and thus no count of friends could be obtained. The resulting dataset has 161 Election Day observations of Facebook friend counts (and 206 observations from 19 November; 167 from 26 October; and 128 are from 26 September), and 98 Election Day observations of Twitter follower counts (and 116 observations from 19 November; 125 from 26 October; and 108 are from 26 September).

To test the relationship between the amount of social network support a candidate had on the specified dates and the election result, two regression models were specified: (1) a linear OLS model of vote share; and (2) a logistic regression model with election outcome (win or not) as the dependent variable. The key explanatory variables of interest are the number of Facebook friends or Twitter followers (in 000s), or the change in the number of Facebook friends or Twitter followers over time. Separate models were run that included Facebook variables from those that included Twitter variables.[1] In particular, we are interested in whether these variables add significant explanatory power over and above the control variables. Control variables included a dummy variable to indicate whether the candidate was the incumbent; a dummy variable indicating whether the political party of the candidate is the

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[1] Including both sets of variables in a single model does not substantially change the results or conclusions of our paper, but adds the problem of multicollinearity due to the close correlation between the candidates' numbers of Facebook friends and Twitter followers.

same as the political party that won that electorate seat in the previous (2008) elections; a variable indicating the candidate's ordinal position on their respective party list;[2] as well as party fixed effects. The software program R was used to estimate the models (Kleiber and Zeileis 2008). The reliability of the OLS vote share models was assessed by the R^2, which measures the amount of variation in the dependant variable captured by the given independent variables, and the root mean squared forecast error (RMSFE), which measures the average difference between the actual values of the dependant variable and the predicted values. The reliability of the probit models was assessed by the pseudo R^2, and the percentage of winners correctly predicted.

4. Results and Discussion

Table 1 summarises the results of OLS regression models, with vote share as the dependent variable. Three specifications are presented: Model (1) includes only the number of Facebook friends on Election Day (26 November) as an explanatory variable, Model (2) contains only the control variables (and fixed effects, not shown) as explanatory variables, and Model (3) combines the explanatory variables from Models (1) and (2). Qualitatively similar results are obtained if the number of Facebook friends on other dates (26 September, 26 October, or 19 November) is used as an explanatory variable instead of the number of Facebook friends on Election Day, although the results are quantitatively largest and most significant for the Election Day variables.

Table 1: OLS Regression Results for Facebook Models

Variable	Model (1)	Model (2)	Model (3)
Incumbent individual		-0.009 (0.023)	-0.024 (0.023)
Incumbent party		0.257*** (0.022)	0.258*** (0.021)
List number		<0.001 (<0.001)	<0.001 (<0.001)
Number of Facebook friends on Election Day	0.071*** (0.014)		0.014** (0.006)
N	161	161	161
R^2	0.136	0.909	0.912
RMSFE	0.186	0.049	0.049

* *p*<0.1; ** *p*<0.05; *** *p*<0.01

Two results are clear from Table 1. First, on its own the number of Facebook friends on Election Day is a significant predictor of the vote share – an additional thousand Facebook friends is associated with a 7.1 percentage point higher share of the vote. After including the control variables, the size of this effect falls to 1.4 percentage points per thousand Facebook friends. Second however, the incremental effect of including the number of Facebook friends

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[2] If the candidate was not on their respective party list, or running as an independent, they were given a large value to indicate this.

in a model that already includes control variables for incumbency and party is minimal. Model (2), which includes only the control variables, already explains 90.9 percent of the variance in vote share, and the addition of the number of Facebook friends to the model only increases its explanatory power (as measured by R^2) by 0.3 percentage points, while having almost no effect on the size of the error (RMSFE).

The absolute number of Facebook friends might not be truly indicative of election results in the case where a late groundswell of support for a particular candidate occurs in the lead-up to an election. This would be particularly true if Facebook users rarely 'un-friend' someone once they are following them. In this case, the absolute number of Facebook friends for a candidate might be less important than the change in the number of Facebook friends in the lead-up to Election Day. Table 2 summarises the results of specifications where the *change* in the number of Facebook friends are included as explanatory variables. Three specifications are included, each with a different time period over which the change is measured, from one week before Election Day to two months before Election Day. Interestingly, the change variables are more statistically significant the longer the time horizon. Thus, a change in the number of Facebook friends over a longer time period is more strongly associated with vote share. In spite of that result, the overall results are similar to those in Table 1, in that the change variables appear to add little explanatory power to the vote share model.

Table 2: OLS Regression Results for Facebook Models
including the Change in Number of Facebook Friends

Variable	Model (4)	Model (5)	Model (6)
Incumbent individual	-0.016 (0.024)	-0.009 (0.023)	-0.012 (0.023)
Incumbent party	0.250*** (0.022)	0.256*** (0.022)	0.259*** (0.022)
List number	<0.001 (<0.001)	<0.001 (<0.001)	<0.001 (<0.001)
Change in the number of Facebook friends over two months prior to Election Day	0.013** (0.005)		
Change in the number of Facebook friends over one month prior to Election Day		0.016* (0.010)	
Change in the number of Facebook friends over one week prior to Election Day			0.037 (0.031)
N	91	120	160
R^2	0.854	0.896	0.910
RMSFE	0.060	0.055	0.049

*$p<0.1$; **$p<0.05$; ***$p<0.01$

Vote share might not be the best specification, since for multi-party (that is, greater than two-party) elections the vote share is an imperfect indicator of election success (Kendall and Rekkas, 2012). Table 3 instead presents the results from probit models of the election results, including the same explanatory variables from Tables 1 and 2. For Models (1)-(3), the results

are qualitatively similar if the number of Facebook friends is included from dates other than Election Day. These results are similar to those for the vote share models, and demonstrate that the models including control variables do an excellent job of predicting election winners. The addition of the absolute number of Facebook friends appears to increase the proportion of winners that are correctly predicted in the model, but by only 2.4 percentage points over a model including only the control variables. Unlike the models of vote share, the change in the number of Facebook friends is not significantly associated with probability of election success.

Table 3: Probit Regression Results for Facebook Models

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Incumbent individual		-18.05***	-18.40***	-17.51***	-17.09***	-18.10***
		(0.621)	(0.643)	(0.850)	(0.775)	(0.646)
Incumbent party		22.82***	23.05***	21.74***	21.67***	22.89***
		(0.560)	(0.661)	(0.873)	(0.748)	(0.618)
List number		<0.001	<0.001	<0.001	<0.001	<0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Number of Facebook friends on Election Day	0.546*** (0.155)		0.468* (0.269)			
Change in the number of Facebook friends over two months prior to Election Day				0.234 (0.255)		
Change in the number of Facebook friends over one month prior to Election Day					-0.061 (0.432)	
Change in the number of Facebook friends over one week prior to Election Day						1.650 (2.215)
N	161	161	161	91	120	160
Pseudo R^2	0.080	0.725	0.737	0.615	0.680	0.729
Percentage of winners predicted correctly	16.7%	88.1%	90.5%	88.2%	87.8%	90.5%

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table 4 summarises the vote share models including Twitter variables. For Models (1)-(3), the results are qualitatively similar if the number of Twitter followers is included from dates other than Election Day. The results differ from the Facebook results in that the absolute number of, and changes in the number of, Twitter followers are much more significant in these models than the Facebook variables considered in the previous models. Despite this higher statistical significance, the size of the effect is much smaller for Twitter than for Facebook. For instance, an additional thousand Twitter followers is associated with

an additional 0.6 percentage points of vote share (after controlling for other variables), compared with 1.4 percentage points for an additional thousand Facebook friends. This may be explained by less political affiliation associated with following a candidate on Twitter as opposed to Facebook.

When the change in Twitter followers over time is considered, the results are contrary to the Facebook findings shown earlier, in that there does not seem to be any difference in the explanatory power if the change in Twitter followers is considered over a longer time horizon. The number of Twitter followers may be less sensitive to groundswells of popular support for a given candidate. Finally overall, as with the Facebook models, the Twitter variables on their own do a poor job of predicting vote share, and they add very little additional explanatory power over and above that provided by the control variables.

Table 4: OLS Regression Results for Twitter Models

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Incumbent individual		-0.005 (0.028)	-0.012 (0.028)	-0.038 (0.026)	-0.017 (0.027)	-0.013 (0.646)
Incumbent party		0.229^{***} (0.031)	0.229^{***} (0.031)	0.241^{***} (0.028)	0.228^{***} (0.031)	0.231^{***} (0.031)
List number		<0.001 (0.001)	<0.001 (0.001)	<0.001 (0.001)	<0.001 (0.001)	<0.001 (0.001)
Number of Twitter followers on Election Day	0.016^{***} (0.003)		0.006^{***} (0.001)			
Change in the number of Twitter followers over two months prior to Election Day				0.005^{***} (0.001)		
Change in the number of Twitter followers over one month prior to Election Day					0.012^{***} (0.002)	
Change in the number of Twitter followers over one week prior to Election Day						0.042^{***} (0.006)
N	98	98	98	76	91	97
R^2	0.062	0.896	0.904	0.890	0.901	0.908
RMSFE	0.186	0.052	0.050	0.051	0.049	0.049

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Table 5 presents the results from probit models of the election results. For Models (1)-(3), the results are qualitatively similar if the number of Twitter followers is included from dates other than Election Day. Unlike the Facebook results presented earlier, these results are quite different to the vote share models, with Twitter variables having no significant associations

with the probability of election success. This is true both of the absolute number of Twitter followers as well as the change in the number of Twitter followers. These variables also add nothing to the explanatory power of the models.

Table 5: Probit Regression Results for Twitter Models

Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Incumbent individual		-16.73***	-16.73***	-17.54***	-17.34***	-16.74***
		(1.494)	(1.364)	(1.070)	(1.114)	(1.207)
Incumbent party		22.85***	22.85***	22.79***	22.80***	22.80***
		(1.306)	(1.122)	(0.853)	(0.828)	(0.896)
List number		-0.003**	-0.003**	-0.008**	-0.008**	-0.003**
		(0.001)	(0.001)	(0.004)	(0.004)	(0.001)
Number of Twitter followers on Election Day	0.321 (0.227)		0.010 (0.069)			
Change in the number of Twitter followers over two months prior to Election Day				0.026 (0.058)		
Change in the number of Twitter followers over one month prior to Election Day					0.036 (0.132)	
Change in the number of Twitter followers over one week prior to Election Day						-0.027 (0.402)
N	98	98	98	76	91	97
Pseudo R^2	0.030	0.820	0.820	0.793	0.819	0.820
Percentage of winners predicted correctly	5.4%	94.6%	94.6%	93.5%	94.1%	94.6%

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

5. Discussion

Our key results provide a number of implications for the use of social media as an indicator for predicting election outcomes. First, we found that the absolute number, and changes in the absolute number, of Facebook friends or Twitter followers *on their own* were extremely unsatisfactory as predictors of election outcomes. For instance, using only the number of Facebook friends as an explanatory variable, only 16.7 percent of election winners were predicted correctly. The comparable value for Twitter followers was just 5.4 percent. Our *a priori* expectation was that social media was an indicator of grassroots support for a candidate, which would translate into more votes on Election Day. There are a number of explanations for why the size of social media following is not predictive of election results. Most obviously, the demographic profile of social media users may differ significantly from the profile of typical voters. Social media users tend to be younger than non-social media

users, with no differences in social media use by education level (Correa et al. 2010). In contrast, voters tend to be older and better educated than non-voters (Vowles 2010). Thus, increases in social media following may be related to increased numbers of votes, but not in sufficient quantity to change election results because the majority of voters are not social media users. However, as the profile of social media users ages (Lenhart *et al.* 2010), it is likely that social media's usability as an indicator of popular voting support will increase.

Alternatively, the lack of predictive power of social media connections for elections may be due to the low level of engagement that social media connections entail. There is a very low cost to the individual Facebook or Twitter user associated with 'friending' or following a given political candidate. It takes little effort or time to friend or to follow a candidate. The only cost may be social – where the users own friends might disagree with the user's choice of candidate. Given the low cost associated with making a connection on social media, the quality of that connection (or the number of such connections) as a signal of popular support is likely to be low because it essentially represents a very weak form of engagement between the candidate and each user. Furthermore, users may friend or follow many candidates and not just their preferred candidate, including candidates in electorates that they are ineligible to vote in. Thus, the number of social media connections may not necessarily directly relate to voting behaviour, which is both more costly to the voter than making a social media connection, and where the voter may select only a single candidate rather than many.

Secondly, our models demonstrate that incumbency and party fixed effects alone do a good job of predicting election results. Our estimated incumbency effects are roughly double those observed for Canadian elections in a similar multi-party election (Kendall and Rekkas, 2012). This probably arose due to the specific nature of the 2011 New Zealand General Election. The incumbent National government, while falling just short of a majority, increased its vote share significantly at the expense of the main opposition Labour party. The large incumbency effects we observe in our analysis (and significant party fixed effects, which we have not reported) likely result from this feature of the election.

The large and significant incumbency effects might also help to explain the lack of significance of many of the social media variables when both sets of explanatory variables are included. It is likely that incumbent candidates have extensive pre-existing social networks (including online), and have had more resources to build their social media presence. Both of these would lead incumbents to have larger social networks (more Facebook friends and more Twitter followers), which creates a multicollinearity problem for the estimations, lowering the statistical significance of the explanatory variables. We observe this effect for Facebook, but not for Twitter. This may be because Facebook has existed for longer, and therefore may be more accepted by incumbent political candidates as a way of engaging with their constituencies, whereas Twitter is newer and thus incumbents may not have such an advantage. The 'change in social media following' variables are likely to be less affected by incumbency.

Thirdly, the addition of social media variables to a model that already includes incumbency and party fixed effects as explanatory variables adds very little to either the explanatory power of the models, or their predictive ability. The social media variables are often statistically significant, but the size of the effects is small. Furthermore, the change in Facebook friends or Twitter followers is associated with vote share, but not with the probability of election success. In combination, these results suggest that social media only has a practical effect in elections that are likely to be closely fought. That is, when the result is uncertain beforehand, there is a greater chance that social media might make the difference between winning and losing an electorate. In electorates that are not as closely fought, social media will make little difference to the result. The result highlights the difference between statistical significance and practical significance of results. While the social media variables might be highly statistically significant (as they are in many cases), the size of the effect is too small to be of practical significance. Future research should explicitly consider the potentially predictive role of changes in social media followings, for constituencies where the final result is expected to be very close.

Fourthly, the effect of an additional thousand Facebook friends on Election Day is much larger than the effect of an additional thousand Twitter followers. This suggests that Facebook is a stronger indicator of voter behaviour, and may be explained as noted previously by the costs to social media users. While both Facebook and Twitter entail low costs of adding a candidate to a user's social network, the cost is likely to be lower for Twitter than for Facebook. This is because the network structure is more transparent on Facebook, and typically all a user's friends can see which candidates they are friends with. This is less true of Twitter, which means that the social cost of friending a candidate on Facebook is greater than the social cost of following them on Twitter. Furthermore, it could be argued that Facebook is more entrenched in daily lives of New Zealanders than is Twitter, so users put more energy and thought into their actions on Facebook than they do on Twitter. Accordingly, we would expect Facebook to denote a greater level of engagement than Twitter and therefore be more predictive of actual voting behaviour, which is what we observe in the data.

Finally, the change in the number of Facebook friends is more statistically significant, the longer the period over which the change is considered. This potentially demonstrates the impact of political campaigns on social media engagement and voting behaviour. It also shows that candidates would be best served to invest in social media early in their campaigns, if they expect the election to be closely fought.

6. Conclusions

In the introduction to this paper, we posed a number of questions about the relationship between social media presence and election results. Overall, our results suggest that there is a statistically significant relationship between the size of online social networks and election

voting and election results. However, the size of the effect is small and it appears that social media presence will therefore only make a difference in closely contested elections. Thus, candidates would be well advised to invest more heavily in social media when the election race is likely to be tight. Moreover, investments should be made early in the campaign, because changes in the size of social media following appear to have a greater effect over longer time horizons. Despite these results showing that the size of candidates' online social networks are not good predictors of election results, it is possible that these data could be combined with poll data in order to improve predictions, because at the margin at least, social media following is statistically significant. Furthermore, there is at least some theoretical support for considering the effect of the *structure* of social networks on election results in future research. Conitzer (2012) found that more connected voters (those with a denser set of social network connections) might be better indicators of group voting behaviour.

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