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Predicting the Vote in Kinship-Based Municipal Elections: The Case of Arab Cities in Israel

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Abstract

This paper examines the feasibility of using pre-election polls in kinship-based municipal elections in Israel, and the methods needed to increase the accuracy of predicting the results. The research focuses on the Arab society in Israel, which is an ethnic minority within a nation-state and a traditional society and that its municipal elections are characterized as kinship-based elections. The results of municipal elections in four Arab cities and towns show that pre-election polls succeeded in predicting the elections' outcome with high accuracy. This research suggests the use of 'Clan Sampling' in which the sampling is according to the sub-tribal societal structure - and further suggests applying the 'Cross-Section' treatment for the undecided. Separately applying one of the two treatments gave a high level of accuracy; the accuracy further increased when applying the two methods together. By adjusting the methods used, pre-election polls were found to be accurate in predicting the vote in elections within a traditional Arab society.

Keywords: *polls, elections, undecided, municipal, clan, sampling, Israel.*

Introduction

Pre-elections polls are a tool for candidates in elections, from the top tier - at the national elections- to the lowest level of elections- the local elections, to help them win in their political campaigns. Pre-elections polls, along with exit polls, are as well tools used for different purposes by the media, by academic researchers, and by the public.¹ Pre-election polls are polls conducted beforehand of the upcoming elections until few days before the Election Day. On the contrary, exit polls are held during the Election Day usually by asking voters to repeat their vote in a semi-poll outside an official polling ballot.

Pre-elections polls and exit polls are becoming increasingly popular over the years in more countries and societies. While trying to predict as exactly as possible the results of the upcoming elections, thus increasing their accuracy, pollsters cope with methodological problems (such as coverage, sampling, weighting, adjustment, and treatment of non-disclosers); socio-political issues (such as characteristics of the campaign, of the parties, or of the electoral system); and sociological issues (such as characteristics of the society). Nonetheless, errors happen occasionally, expanding the criticism on miss-predicted polls.² Examples range from around the world such as in the Presidential elections in the United States in underestimating of Ronald Reagan's victory in 1980, or the overestimation of Bill Clinton's victory³ in 1996, or mis-predicting the Trump win in 2016, or Hungary's 'Black Sunday'⁴ in 2002.

Elections held in 2015-2016 in several countries expanded the number of miss-predicted polls. Here are some examples. In May 2015, pre-election presidential polls in Poland predicted a lead for the then president Bronislaw Komorowski over the other candidate, Andrzej Duda. President Komorowski was even predicted to win from the first round, given the margin of error (for example 39% to 31% in the pre-election poll from May 8th).⁵ The exit polls showed different expected results - a tie with a slight lead by Duda over Komorowski (34.8% to 32.2%)⁶, which was close to the actual vote (34.8% to 33.77%)⁷ in the first round. Eventually, Duda was declared the winner of the second round of the elections.

A similar situation was found at the same month during the national legislative elections in Britain. The pre-election polls predicted a competitive race between the Conservative party and the Labor party (for example 219 to 219 seats⁸). However, the exit-polls showed different expected results - lead by the Conservative party (316 to 239 seats⁹). Eventually, the election results were not competitive as the pre-election polls predicted. The Conservative party gained a majority in the parliament (330 to 232 seats)¹⁰. The exit polls predicted the lead of the Conservatives, but short by few seats of predicting the majority.

The question of why the pre-election national polls were not accurate with the actual vote in Poland and Britain is expected to be the subject of extensive investigation. The problem is, why have the exit polls tended to be so much more accurate than the pre-election polling? The first answer should be that campaigns do matter, as recently re-confirmed in studies related to 'Get Out the Vote' – GOTV.¹¹ Furthermore, last-minute changes can occur in the elections, a move that the exit-poll has the chance to reflect. However, the primary methodological explanation is that the exit poll has a better design than pre-election polls. The exit poll is a panel design, where most of the polling ballots that are exit polled, are retained from the last election. Other problems in pre-election polls may occur due to seemingly simple issues, such

as outdated data of phone numbers. This may happen recently because of laws that prevent selling or buying such data to protect the privacy of the citizens. It may also occur because of the technological progress - more households don't have a landline at home and have only mobile phones, which makes it more problematic to maintain an updated data. Other problems regarding updated phone numbers data are that more countries are opening the communications market to several providers, which makes the possibility of holding an updated data of phone numbers almost impossible. The lack of an updated list of phone numbers provides an answer to one of the fundamental difficulties of polling, where the sample might be unrepresentative of the population. The exit poll sample may still be non-representative, but in national elections, if you know the relationships between the exit poll and the actual results from the previous election, for each polling ballot, it is easier to figure out how to interpret the changes you see in the exit poll data you get in current election.

This pattern of erroneous pre-election polls continued as well in major electoral campaigns in 2016, such as the Brexit vote in the UK and the Presidential elections in the US. While these two examples are worth to be examined, they are different in the way campaigns are run, and the ways winners are decided when compared to the primary focus of this research.

A much more problematic situation was the outcome of the Israeli elections, during March 2015, which may be considered as 'The Black Tuesday of the pollsters in Israel.' As indicated in Table 1 below, the pre-election national polls in Israel predicted a lead for the Zionist Union party over the Likud party (21 to 25 seats out of 120 seats in the Knesset). The pre-election national polls also predicted a slight lead for the left-center parties over the right-religious (64 to 56 seats). As in the British case, the exit polls showed a different situation than the pre-election polls. The Likud party was predicted to lead over the Zionist Union (27 to 26 seats). However, the lead of the left-center parties over the right-religious parties was maintained (65 to 55 seats). Conversely to the British and the Polish cases, the election results were not as predicted - by neither the pre-election results nor the exit polls. The Likud party was eventually the biggest in the Knesset and much more than the Zionist Union (30 versus 24 seats), yet with a slight change of the difference between the political blocks. Hence, in the Israeli case, there are two critical questions - why the pre-election polls were so far off the actual vote? And why the exit polls were also far off the actual vote?

Table 1. Israeli 2015 Election Results (seats in the Knesset) Compared to Pre-Election Polls and Exit Polls

Affiliation	Party	Pre-Election Polls	Exit Polls	Election Results
Left	The Zionist Union	25	26	24
	The Joint List	13	13	13
	Meretz	5	5	5
	Total Left	43	44	42
Center	Yesh Atid	12	11	11
	Kulanu	9	10	10
	Total Center	21	21	21
Religious	Shas	7	7	7

	Yahdut HaTorah	7	7	6
	Total Religious	14	14	13
Right	Likud	21	27	30
	The Jewish home	12	8	8
	Israel Beiteinu	5	6	6
	Yachad	4	0	0
	Total Right	42	41	44
Total		120	120	120

Note. Pre-Election Polls results were calculated as average of all polls conducted on March 11-13, 2015, based on pre-election polls from the Gershoni-Eliaho dataset¹²; Exit Polls results are according to Dialogue LTD¹³; Election results are according to Central Election Commission for the 20th Knesset¹⁴

While trying to answer the first question, it should be noted that the significant difference between the predictions and the actual vote is observed mainly in the results of the Likud party (actual 30 seats vs. 21 predicted seats). At the same time, the actual results of the political blocs were close to the familiar ones by the pre-election polls (actual 63-57 vs. 64-56 predicted). Thus, we suggest that the pre-election polls did indeed reflect the trends among Israeli voters for the day they were conducted, which is less than a week before the Election Day. Then, these expected results helped the negative-motivation-campaign of the Likud, led by the Israeli Prime Minister, Mr. Benjamin Netanyahu. His electronic media campaign adopted the strategy of the GOTV method¹⁵, successfully moved voters especially within the right-religious political blocks, from the Jewish Home and Yachad parties to the Likud party, and by increasing the turnout of traditional right-wing voters, among whom was a higher level of Likud traditional voters.

In the British case, as mentioned above, several explanations help to understand the difference between the pre-election polls and the exit polls, which prove the latter to be more accurate. The question is then, how in the Israeli case the least predictive vote be explained both in pre-election polls and in exit-polls? Several explanations are suggested. Some of them rely on the method and can be controlled by pollsters, such as¹⁶ sampling errors of unrepresentative voting ballots; miss calculating of the ballots to reflect the national vote; closing the exit-polls at an earlier hour (in order to have enough time to prepare for media presentation); or not having enough voting ballots due to financial constraints. Other explanations reflect social aspects, such as respondents not giving candid answers or an effect of the ‘Spiral Silence’¹⁷ when voters become reluctant to express their preferences to pollsters. These explanations were suggested by some pollsters in this case due to antagonism from right-wing supporters towards the pollsters and the media – that was accused of being more supportive of left-wing parties – which led some of the right-wing fans to mislead the pollsters or to a low percentage of response. It seems like all these errors, among many others, may have contributed to the discrepancies in the results.

Given these errors in the national elections in Israel, what would be the case of such polls at the local level? Are pre-election polls accurate in municipal elections? Moreover, is it useful in kinship-based society during municipal elections? The complexity of predicting the

vote in such communities is another social aspect that causes erroneous polling results. In kinship-based communities, a small group of leaders will make decisions for all the others, who will follow them and vote accordingly without implementing individual decision making. Thus, the representation is based on kinship relationship such as in the Biradari system of the Pakistanis in some UK cities.¹⁸ Such a society is in-fact divided into groups according to extended families, clans, bands, ethnic, racial, or other sub-tribal structures. However, each group can differ from the other regarding commitment and support of the leaders' decisions. It also may be less responsive to pre-election polls. Some previous attempts of pre-election polls in such societies failed to predict the results. For example, in the Palestinian legislative election in 2006, the pre-election polls¹⁹ predicted the lead of the Fateh Party over the Change and Reform Party - a party affiliated with Hamas - (39.3% to 31.3%) while the actual results showed an unpredicted victory for Hamas over Fateh (44.5% to 41.4%).²⁰

Following this discussion, the research questions are (1) Can pre-election polls apply for municipal elections in societies with sub-tribal structure (tribal society)? And (2) How can such polls increase their levels of accuracy?

Case Study

To examine these questions, Arab cities and towns in Israel were studied as a case study of such a kinship-based society. As indicated in Table 2, in the Israeli local government structure there were 85 cities, towns, and villages in which there was an Arab majority in 2013. About 85% of the Arab citizens in Israel of which a majority are Muslims (80%), but also include Christians (10%) and Druze (8%).²¹ These, together with Arabs living in mixed cities with Jews, constitute the Arab society in Israel, which is an ethnic minority within a nation-state. It is common to characterize the municipal elections in these Arab cities and towns as kinship-based.²²

Table 2- Municipalities with Arab Majority in Israel- 2013²³

Municipality Type	With Arab Majority (number)	Percentage out of all Arab majority (percent)	Arab Population in Arab majority municipality (thousands)	Percentage out of all Arabs in Israel (percent)
Cities	11	13.0	406	30.0
Local Council (towns and villages)	70	82.0	698	52.0
Regional Council	4	5.0	27	2.0
Total	85	100.0	1,131	84.0

Note: In total, about 1.6 million Arabs live in Israel (excluding the West Bank), 1.1 million of them live in their homogeneous cities, towns, and villages, 200,000 live in mixed cities, and 300,000 live in East Jerusalem

At the national level, Arabs of Israel have been active in the Israeli political system since the establishment of the state of Israel²⁴. The political trends among the Arabs in Israel have been described by other scholars in three periods:

- a) During the observation period (1949-1974) the turnout among Arab citizens was higher than that of the Jewish citizens. Most of the Arab vote was controlled by MAPAI - the leading party at that time - and given to the Arab satellite - parties that were controlled by MAPAI;²⁵
- b) During the integration period (1974-1988), the Arab society was trying to abandon the flock voting.²⁶ Al-Jabha became the leading party among the Arabs, but more Arabs voted directly to Zionist parties.²⁷ In total, fewer Arabs participated in the national elections.
- c) During the protest period (since 1988), new Arab parties were established, and fewer Arabs voted for the Zionist parties.²⁸ However, overall fewer Arabs voted due to an ideological boycott of the elections, reaching a gap of more than 10% compared to the Jewish voters in Israel.

Conversely, at the local level, there is a different political structure in Arab cities and towns. The local level is more convenient for Arab politicians; thus, they are more involved in it. It provides a stage on which Arab leaders can influence and address on local issues. Therefore, there is no ideological boycott of the local elections. As such, the local turnout in Arab localities is higher than in Jewish localities.²⁹ For example, in 2013 the participation in most of the Arab local elections was above 80%, compared with the Israeli average of only 51% in the same year.³⁰ This high percentage represents the significant role of kinship-based social networks among the Israeli-Arab society, i.e., extended families or clans (*hamulas*), which leads to kinship-based voting patterns, competition between these social networks over public resources and jobs, while occasionally involving nepotism and fraud.³¹

The national parties mentioned above are not much present in Arab municipal elections, except in major cities, such as Nazareth. Local parties are usually a sub-tribal group such as a clan party or an extended family party. Thus they depend on the number of voters in each category and the blood-relationship between the candidate and the supporters, and less on ideology or ideas. Recent studies claim that in the last decade the influence of the clan grew stronger in Arab cities and villages. In 2003, only 11 Arab mayors were elected as representatives of a political party and all the other 42 Arab mayors were representatives of a clan.³²

Methodology

The First Phase

To examine the research questions, an analysis of two phases was employed. The correlation between the predicted results of phone-based polls and the actual results of the election of the mayors in the first round was examined. However, the same methods were conducted regarding predicting the vote of council members and later for the second round, where needed. These showed the same findings. Thus, they were not of significant value to be reported in this study. In the first phase, the pre-election polls were sampled randomly, however, while controlling for social characteristics to reflect the actual population including race\ethnicity\religion³³, gender, secularity, education, economic status, age, marital status, and others.

Table 3. The Study Sample

Municipality	Population in 2013 (thousands)	Voters in 2013 (thousands)	Number of candidates for mayor	Number of pre-election polls	Dates of pre-election polls
i=1	28	19	2	1	During the week before Election Day
i=2	39	26	3	1	During the week before Election Day
i=3	16	12	2	8	During the period of 6 months before Election Day
i=4	12	8	4	8	Period of 6 months before Election Day

Note: Source of data - Central Bureau of Statistics.³⁴

This examination was conducted on a sample of two cities and two towns that were chosen from these Arab municipalities in Israel (see Table 3 above). The sample is diverse and represents all kinds of Arab towns in Israel: a small city of Muslim majority; a mid-size mixed-city of Muslim majority; a town with a Druze majority; and a mixed-town with Muslims, Christians, and Druze. The only exception is that the case study does not consider the Arabs in southern Israel, who are mostly Bedouin - these were not part of this study.

The Second Phase

In the second phase, the correlation to the actual results was examined only in two cities compared to different methods of polling, of sampling and of the treatment of the ‘undecided’. First, this time the examination was based on polling of the respective municipality using three methods of polling: (a) pre-election poll conducted by telephone survey; (b) field polling that

was held few days before the elections. A polling station was arranged at the center of each town and residents were invited to participate in the poll; and (c) internet polling, in which participants were encouraged to share their opinions. This will help determine whether different methods lead to better accuracy.

The sample in the phone-based polls was controlled, as will be explained later. However, such control was more problematic in the other two methods. To maintain the proper sampling in the field polling and the internet polling, participants were asked at the end of their questionnaire for identification questions that helped later identify the affiliation to the sub-tribal group. If a group was over-represented by participants, then the value of each respondent's answers from this group was reduced to a level that matches precisely with their percentage out of actual eligible voters. On the other hand, if a group was under-represented, then the value of each respondent's answers from this group was increased to a level that matches precisely with their percentage out of actual voters

Second, the correlation to the actual results was compared to a different method of sampling. This time the proportionate stratified random sampling³⁵ was used. Stratification is the method of sorting the population- the eligible voters- into categories, before sampling. Within each stratum, respondents would be sampled in proportion to their population frequency³⁶ to ensure that the sample of respondents within a stratum equaled the population percentage. This is expected to increase the sample's efficiency by controlling variables that contribute to the variance of the total sample³⁷.

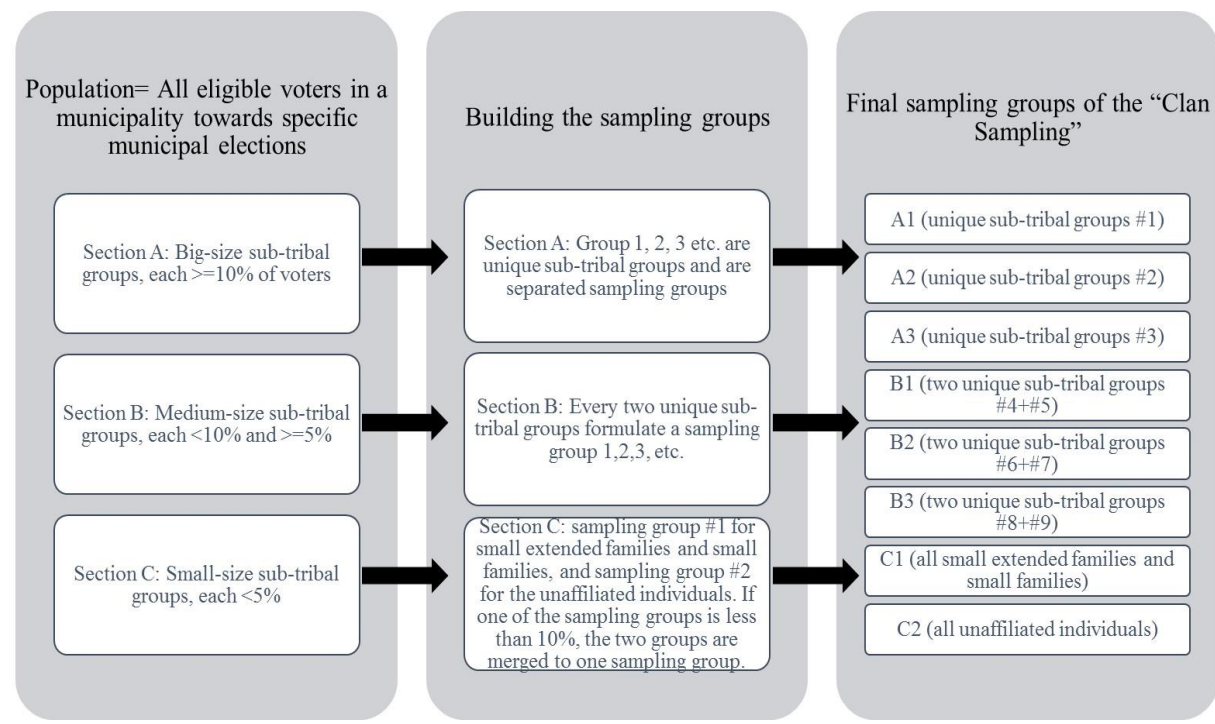
'Clan Sampling'

Using stratified sampling, the population was divided into sub-tribal groups. Thus it's called 'clan sampling'. Using this method, the actual societal structure is reflected in the sample according to the sub-tribal groups in the total population. To do so, the sub-tribal groups were divided into three sections (see Figure 1): (a) Large-size sub-tribal groups, in which each sub-tribal group has equal to or more than 10% of the eligible voters. In this case, each sub-tribal group remains a separated sampling group in the final clan sampling; (b) Medium-size sub-tribal groups, in which each sub-tribal group has equal to or more than 5% but less than 10% of the eligible voters. In this case, every two sub-tribal groups, chosen randomly, are merged to form a new sampling group in the final clan sampling; (c) Small-size sub-tribal groups, in which each sub-tribal group has less than 5% of the eligible voters, and all the other individuals. In this case, it is preferred to formulate two sampling groups. One will contain the small extended families and small families, and the other will be formulated for the unaffiliated individuals. This unless one of these sampling groups will still be less than 10% of the voters. In such case, the two sampling groups will be merged into one sampling group. In a vice versa situation, such as in highly divided sub-tribal society, when the sampling groups of section (c) has more than 20% of the eligible voters, it is preferred to separate them randomly into two or three sampling groups as required to guarantee that each sampling group of section (c) will have less than 20% of the eligible voters.

In the final sample, each sampling group was represented by the same percentage of required respondents as their percentage of the eligible voters. These steps guarantee that each last sampling group has at least 10% of the eligible voters. When considering that every poll

sample was comprised at least 300 respondents, this means that every sampling group had at least 10% of it - which is at least 30 respondents.

Figure 1- Clan Sampling



Every eligible voter was assigned to a specific sub-tribal group according to his/her affiliation, and only afterward random sampling was employed within the sampling group. The groups were identified by the sub-tribal groups which were created by following a field research that was focused on understanding the social structure of the specific city. The process started with the collection of data from official sources on religion/race/ethnicity of the population in the town. Then, during the field research the major sub-tribal groups - mainly clans and extended families - were defined after consulting with city officials and interviewing local citizens. The same method that helped with the final step would assist in identifying the smaller sub-tribal groups. The 'clan sampling' would be accurate enough, when this grouping is tested first in a specific survey that will evaluate to what extent the groups were representative of the population. This step was conducted before the first actual pre-election poll. Moreover, even after implementing this procedure, at the end of each poll respondents were asked to identify themselves to which sub-tribal group they think they belong to, while

showing them or reading to them the list of options that were identified so far. Following respondents' answers, changes were made in the affiliation of a specific respondent or a group.

‘Cross-section’ Treatment of the Undecided

Third, we examined the different treatment of the undecided. The predicted results are given in percentage of voters considering the expected turnout and after treatment of the undecided. The undecided are those who have not yet made up their minds about whom to vote for or are those who decided not to share their thoughts with the pollster - which is a significant characteristic of polling in tribal societies. Their subsequent decisions may be influenced by campaign activities and current events that cannot be predicted at the time of conducting a poll.

At first, the assumption of proportional distribution of the undecided was adopted.³⁸ Thus, the undecided were dropped from each poll, and the candidates' shares were recalculated accordingly. However, in all the methods of the second phase, the same treatment for the undecided was used and then adopted a new approach that is assumed to be more suitable for tribal societies. According to this new ‘cross-section’ treatment, it is more likely to allocate more undecided to the candidate who is representing the smaller sub-tribal group. The idea behind this is like allocating the undecided to the challenger if there is an incumbent.³⁹ The idea is in line with the ‘Spiral Silence,’ when voters that belong to a smaller group might feel afraid to express their preferences to pollsters, or might be less responsive to pollsters, or might feel that their candidates tend to lose the elections, then they prefer to keep their preferences to themselves. According to this, in a two-candidate’ campaign, the candidate representing the smaller sub-tribal group will receive the higher share from the undecided - like the percentage of the leading candidate -, and the candidate representing the bigger group will gain the lower share from the undecided - similar to the portion of the other. In a three or more candidates election, the ‘cross-section’ will work similarly - candidates 1-2-3 will receive the amount associated with 3-2-1 relatively, and so-on.

The ‘cross-section’ treatment of the undecided is suitable in the case that most of the voters in a sub-tribal group are supporting one candidate. In this research, this procedure hasn't been tested in case there are two or more candidates from the same sub-tribal group, and in case one of them did not receive at least 80% support from the voters of his group. This should be tested in future research.

Statistical Analysis

Following previous studies⁴⁰, the mean squared error (MSE) was used to determine how accurate is each method compared to the actual results. The MSE is an estimator that measures the average of the squares of the errors, which is the difference between the estimator and the actual results. The framework of the correlation is:

$$(1) \text{MSE} = \frac{1}{n} \sum_{i=1}^n (\widehat{Mit} - Mit)^2$$

In equation (1), MSE is the estimator of the correlation between \widehat{Mit} and Mit . \widehat{Mit} is the vector of the predictions of the results \widehat{M} of the n candidates in the elections of a specific town i in a specific method t . Mit is the vector of the actual results of the elections for the candidate n of a specific town i in a specific method t . To compare between the different towns, the root-mean-square error (RMSE) was employed, as shown in equation (2). The advantage of using RMSE is that it has the same units as the quantity being estimated; for an unbiased estimator, the RMSE is the square root of the variance, known as the standard deviation. The lower the RMSE is, the higher the accuracy of the poll to the actual results.

$$(2) RMSE = \sqrt{\frac{1}{n} \sum_{i=1}^n (\widehat{Mit} - Mit)^2}$$

1. Results of Phase I

Table 4 below reports the expected results of the elections in the four cities and towns according to latest phone-based pre-election polls that were conducted about a week before the Election Day. The data also includes the actual results of the Election Day and the comparison between them and the predicted results in values of the RMSE.

Table 4. Comparison of Pre-election Polls to the Actual Results (latest pre-election polls, conducted about a week before the Election Day)

Municipality	Method- regular (t=1)	Pre-election poll predicted results (percent)	Actual results (percent)	RMSE
<i>Municipality</i>				
<i>(i=1)</i>	Candidate (n=1)	50.9	55.9	5.0
	Candidate (n=2)	49.1	44.1	
	Total	100.0	100.0	
	Turnout	90.0	94.0	
	N	405	-	
	Response rate	73.0	-	
	Undecided	14.9	-	
	SE	4.5	-	
<i>Municipality</i>				
<i>(i=2)</i>	Candidate (n=1)	49.6	43.3	4.5
	Candidate (n=2)	26.6	29.2	
	Candidate (n=3)	23.8	27.5	
	Total	100.0	100.0	
	Turnout	84.0	80.0	
	N	418	-	
	Response rate	65.0	-	
	Undecided	14.3	-	
	SE	4.0	-	

Municipality	Method- regular (t=1)	Pre-election poll predicted results (percent)	Actual results (percent)	RMSE
<i>Municipality</i>				
<i>(i=3)</i>	Candidate (n=1)	61.5	57.1	4.4
	Candidate (n=2)	38.5	42.9	
	Total	100.0	100.0	
	Turnout	88.0	92.8	
	N	436	-	
	Response rate	78.0	-	
	Undecided	12.0	-	
	SE	3.5	-	
<i>Municipality</i>				
<i>(i=4)</i>	Candidate (n=1)	46.9	37.5	5.7
	Candidate (n=2)	24.1	28.8	
	Candidate (n=3)	19.1	23.7	
	Candidate (n=4)	10.0	10.0	
	Total	100.0	100.0	
	Turnout	90.0	86.6	
	N	307	-	
	Response rate	50.0	-	
	Undecided	17.8	-	
SE	5.5	-		

As shown in the data above, all the pre-election polls were accurate (around RMSE=5.0%). The pre-election polls predicted the victory in the first round in the entire sample. However, only in one town, the anticipated results were not accurate enough for the leading candidate (i=4, n=1) who needed the second round to win the elections. In the first city (i=1) the pre-election polls predicted the victory of one candidate (n=1) over the other (by 50.9% to 49.1%), which was accurate (RMSE= 5.0%) with the actual results (55.9% to 44.1%). A similar situation was found in the second city (i=2). The pre-election polls predicted the victory of one candidate (n=1) over the other two (by 49.6% to 26.6%, and 23.8%), which was even more accurate than the first city (RMSE= 4.5%) with the actual results (43.3% to 29.2%, and 27.5%).

The third case (i=3) in the sample had the most accurate predicted results. The pre-election polls predicted the victory of one candidate (n=1) over the other (by 61.5% to 38.5%), which was accurate (RMSE= 4.4%) with the actual results (57.1% to 42.9%). Conversely, the fourth case (i=4) had the least accurate predicted results. The pre-election polls predicted the victory of one candidate (n=1) over the other three (by 46.9% to 24.1%, 19.1%, and 10.0%), which was accurate (RMSE= 5.7%) with the actual results (37.5% to 28.8%, 23.7%, and 10.0%). This RMSE is still considered as accurate results, not only of the relatively low value of RMSE but also due to predicting the leading candidate and the position of the other candidates. However, as mentioned, not only the accuracy of the results here is the lowest in the results, the pre-election poll failed to predict the need for a second round.⁴¹

In other words, evidence of the accuracy of pre-election polls was found in these four municipalities within the Israeli Arabs tribal society. Thus, the first research question was answered: pre-election polls can be accurate in tribal societies.

2. Results of Phase II

However, an answer is still needed to the second question: how to increase the accuracy of such polls? To answer this question, the second phase of the research used the ‘clan sampling’ instead of the random sampling method. The correlation to the actual results was examined with the three different pre-election poll methods only in two towns out of the case study (i=3,4), which were chosen due to the possibility of conducting this kind of research in both towns. The previously reported results in Table 4 which show that the selected towns were the ideal case because they had the best and the worst accurate results compared to the other two. Another significant characteristic of the sample is their societal structure. In one town (i=3) there are several big sub-tribal groups ranging from 10% to 28% of the eligible voters, there are several medium-sized sub-tribal groups of about 5% of the eligible voters, and the individuals and small families- without kinship-based affiliation to any group- are not more than 4%. This town is homogenous with 98% of the people from the same religion. While in the other (i=4) there are no big sub-tribal groups. All the sub-tribal groups are medium-size or small, not exceeding 8% each of the eligible voters. The individuals and small families - without kinship-based affiliation to any group - are about 12%. The second town is mixed and not religion-homogenous as the former town. As such, these two towns are excellent representatives of the case of the Arab cities and villages in Israel.

Table 5 reports the expected results of the elections according to the pre-election polls that were conducted in these two towns starting from six months before the elections until the Election Day, sampled accordingly to the ‘clan sampling.’ The results are shown in two Models. Model 1 shows the results after using the ‘clan sampling’ and proportional distribution of the undecided. Model 2 shows the results after using the ‘clan sampling’ and adopting the new treatment for the undecided – the ‘cross-section’ treatment. The data also includes the actual results of the Election Day and the comparison between them and the predicted results in values of the RMSE. In all these five methods in the two models, the expected winners were as described previously. However, the accuracy of the methods varies. All results show higher accuracy using the ‘clan sampling’ method than the results mentioned in Table 4, without using this sampling, except one method. This one method turned out to be with higher accuracy after using ‘cross-section’ treatment in model 2.

Table 5. Comparison of pre-election polls in two municipalities (i=3,4) from three different methods to the actual results

Treatment of Undecided	Municipality	Method (t=1) (percent)	Method (t=2) (percent)	Method (t=3) (percent)

Model 1	Municipality (i=3)	2.2	1.2	3.7
	Municipality (i=4)	5.2	2.4	3.6
Model 2	Municipality (i=3)	1.3	0.4	3.4
	Municipality (i=4)	4.7	2.2	3.3

Note. Model 1 shows the results after using the ‘clan sampling’ and proportional distribution of the undecided. Model 2 shows the results after using the ‘clan sampling’ and adopting the ‘cross-section’ treatment for the undecided; Method (t=1) is the latest regular poll; Method (t=2) is the field poll; Method (t=3) is the internet poll.

Method 1 of Model 1 is the latest pre-election poll conducted by telephone survey. This was the second most accurate method in both towns (i=3, RMSE= 2.2%; i=4, RMSE= 5.2%). In Model 2, with ‘cross-section’ treatment of the undecided, the accuracy became higher (RMSE= 1.3% and = 4.7%). In the second method, the polling was conducted in the field. Few days before the elections, a polling station was arranged at the center of each town. Citizens were invited to participate in the poll. To maintain proper sampling, participants were also asked for identification questions that helped later identify the affiliation to the sub-tribal group. After evaluating the sample, it was necessary to match it to the ‘clan sampling’ by giving the exact proportion to each group. If participants over represented a group, then the value of each respondent's answers from this group was reduced to a level that matches exactly with their percentage out of actual eligible voters. On the other hand, if a group was under-represented, then the value of each respondent's answers from this group was increased to a level that matches exactly with their percentage out of actual voters.

For example, it was noticed that there were many more participants from specific clans and extended families which was explained later on, through interviews, by the opponent clan leaders' decision to boycott the pre-election polling station. However, by matching the results to the proper sampling of the tribal society, this didn't affect the final results. In fact, the results show, that this method gave the highest level of accuracy in both towns (i=3, RMSE=1.2% and i=4, RMSE =2.4%). Once again, Model 2 which used the ‘cross-section’ treatment gave higher accuracy (RMSE=0.4% and =2.2% respectively).

In the third method, an internet-panel-based poll was conducted. This technique provided a lower level of accuracy than the field method, both in Model 1 (RMSE=3.7% and =3.6% respectively) and in Model 2 (RMSE=3.4% and =3.3% respectively). The fourth method was, in fact, the inclusion of all the telephone surveys in the same town conducted over a period of six months. This method turned out to have the lowest level of accuracy among all the other methods used in this study, both in model 1 (RMSE= 4.9% and =5.7% respectively) and in Model 2 (RMSE= 2.9% and =4.5% respectively). One may assume that the reason is, people changed their minds after a while until the Election Day; or clan leaders changed the clan support; or the number of undecided voters declined as the Election Day got closer. In any case, this method, like the others, predicted the results to some extent. Moreover, this method was the best to predict the expected turnout (expected: 94% and 91.2%, actual: 92.8% and 86.6%

relatively). The last method was the inclusion of all the data from the second, third, and fourth methods. This technique was found as the third best method after the field method and the last regular pre-election poll (RMSE= 2.4% and =3.3%). As in all the other methods, the accuracy of Model 2 was higher (RMSE= 1.7% and =2.9%).

Another aspect of the findings is the profound change that happened to the accuracy when comparing the same method with the 'Clan sampling' or without it. This comparison led to a higher difference in one town (i=3; change of accuracy from 4.4% to 2.2%) compared to the other (i=4; change of accuracy from 5.7% to 5.2%). One may assume that the reason for such a difference relies on the societal structure difference between these two towns, regarding the size and the percentage of the sub-tribal groups. Higher accuracy was achieved all in all, and specifically after using the 'clan sampling,' in the town where there are several big sub-tribal groups and the percentage of small sub-tribal groups and the percentage of individuals and small families- without kinship-based affiliation to any group- is relatively small (i=3).

The Significance of Pre-Election Polls

This paper examined the possibility of adopting the pre-election polls in tribal societies. This study found that pre-election polls could be useful in tribal societies. The results are supported by statistical examination of a case study of four Arab cities and towns in Israel, in which elections are characterized as kinship-based. Hence it confirms that polls can apply for tribal elections and can be accurate in predicting the results. Furthermore, to increase the accuracy of such polls a 'Clan Sampling' method and a 'Cross-section' treatment for the undecided votes need to be employed.

In 'Clan Sampling,' the sample must match as much as possible the societal structure and reflect the sub-tribal groups such as clans or extended families. While examining several methods of polling, the most accurate method that was found was the field method in which citizens were invited to participate at a polling station. It turns to be the most accurate method despite its' possible problems, such as unrepresentative sampling, or lack of response, or even boycotting the polling station by one political side or another - which did occur in this study. The findings indicate a solution to these problems through adopting the use of 'Clan Sampling.'

The use of the 'Cross-section' treatment for the undecided votes, along with the use of 'Clan Sampling,' gave even higher accuracy than was achieved only by using 'Clan Sampling.' By using this double treatment, errors - that may be caused by the 'silence spiral' or any other socio-political problem that may be reflected in the results - were weakened.

Conclusion

The results in this study are based on a case study of selected Arab cities and towns in Israel. However, these municipalities reflect the socio-political status of most of the Arab municipalities in Israel. Thus, we are confident that these methods are suitable to achieve higher accuracy of pre-election polls in other Arab towns in Israel and in other local elections in similar tribal communities. These conclusions and findings may also prove useful in municipal elections in Western countries as well that are absorbing immigrants from traditional Muslim or Arab countries. The suggested methods may prove helpful, given that earlier studies have already indicated that voters in municipal elections base their choice primarily on their

tribal/ethnic group's interests.⁴² However, to implement these methods, an extensive research into the socio-political situation of each municipality is needed, before starting the polling process. Mainly, it is required to build the proper groupings for the 'Clan Sampling.'

We suggest examining the use of the 'Clan sampling' and the 'Cross-section' treatment of the undecided voters also in national elections. Adopting these ideas is likely to help reduce the errors in pre-election polls in nations that are characterized as tribal-societies or when voters tend to change their minds in a similar way as in kinship-based elections. Although further examination is needed, we assume that this was the situation during the latest national elections in Israel. This invites the question of, whether adopting the suggested methods may have helped to achieve more accurate results? Thus, it would be helpful if in the next national elections in Israel pre-election polls, and the exit polls were designed according to societies with sub-tribal structures to examine further whether 'Clan Sampling' and 'Cross-section' methods may strengthen the accuracy of the pre-election polls on a national level.

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