PRE-ELECTION POLLS IN TURKEY

by
İREM AYDAŞ

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ABSTRACT

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İREM AYDAŞ

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Thesis Supervisor: Asst. Prof. MERT MORAL

Keywords: pre-election polls, poll aggregation, poll of polls, survey error, Turkey

The number of pre-election polls has considerably increased in the last decades. Such an increase is accompanied not only by methodological advances and obstacles but also by skepticism and criticism about the precision of the estimates and biases in favor of particular political parties or candidates. While scholarly interest in poll accuracy and quality has also grown considerably in many countries, scholarly work on pre-election polls in Turkey are scarce. This thesis aims to fill this gap by examining a total of 374 pre-election polls conducted after the official announcement of the general, presidential, and mayoral elections in Turkey that took place between 2011 and 2019. Using a revised CNN Transparency Index as a survey quality assessment tool, I find that reporting practices, as well as the designs of the pre-election polls, do not follow scientific standards in the examined cases, and many polls have larger errors than their calculated margins of error (assuming random sampling). Prior work on the poll accuracy suggests that poll aggregation produces more precise estimates by increasing the sample size and reducing errors in different directions. Although pre-election polls do not follow scientific standards, pooling the polls together by weighting the estimates based on (i) sample size, (ii) revised CNN score, and (iii) pollster experience provides a useful forecasting tool for election outcomes in line with theoretical expectations.

ÖZET

TÜRKİYE'DE YAPILAN SEÇİM ANKETLERİ

İREM AYDAŞ

UYUŞMAZLIK ANALİZİ VE ÇÖZÜMÜ YÜKSEK LİSANS TEZİ, ARALIK 2020

Tez Danışmanı: Dr. Öğr. Üyesi MERT MORAL

Anahtar Kelimeler: seçim anketleri, anketleri birleştirme, anketlerin anketi, anket hatası, Türkiye

Seçim anketlerinin sayısı geçtiğimiz on yıllar boyunca önemli ölçüde artmıştır. Bu artışa sadece metodolojik ilerlemeler ve zorluklar değil, anket tahminlerinin doğruluğuna ve bazı siyasi partiler veya adaylar lehine tarafsızlığı konusunda şüpheler ve eleştiriler de eşlik etmektedir. Metodolojik zorluklar ve artan eleştiriler, anket doğruluğuna ve kalitesine yönelik bilimsel çalışmaları pek çok ülkede artırmış olsa da Türkiye'de seçim anketlerle ilgili bilimsel çalışmalar kısıtlıdır. Bu tez, 2011 ve 2019 yılları arasında Türkiye'deki genel, cumhurbaşkanlığı ve belediye başkanlığı seçimlerinin resmî duyurularından sonra yapılan toplam 374 seçim anketini inceleyerek literatürdeki boşluğu doldurmayı amaçlamaktadır. CNN Şeffaflık Endeksi'nin anket değerlendirme aracı olarak kullanıldığı bu çalışma, incelenen anketlerde raporlama pratiklerinin ve anket tasarımlarının bilimsel standartları takip etmediğini ve birçok anketin hesaplanan anket hatasından (rastgele örnekleme varsayımına göre) daha yüksek hata değerine sahip olduğunu göstermektedir. Anket doğruluğu ile ilgili önceki çalışmalar, anketlerin anketlenmesinin örneklem büyüklüğünü artırarak ve farklı yönlerdeki hataları azaltarak daha kesin tahminler ürettiğini göstermektedir. Seçim anketlerinin raporlanması ve anket tasarımları bilimsel standartları karşılamamasına rağmen (i) örneklem büyüklüğüne, (ii) revize edilmiş CNN skoruna ve (iii) anket şirketinin deneyimine dayalı olarak tahminler ağırlıklandırıldığında anketlerin anketlenmesinin oldukça faydalı bir tahmin aracı olduğu gösterilmiştir. Bu bağlamda ampirik bulgular teorik beklentilerle aynı doğrultudadır.

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To my mom Sevda Aydaş
and in loving memory of my dad Tahsin Aydaş.

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1. INTRODUCTION

> "... the only way to understand and evaluate an empirical analysis fully is to know the exact process by which the data were generated and the analysis produced" (King 1995, 444).

The question of "what do people think?" is the fundamental starting point for understanding public opinion. In fact, various approaches have been developed in literature to find answers for this basic yet complex question. Although polls are conducted on almost every topic, pre-election polls constitute the largest proportion of public opinion polls. Since pre-election polls are an integral part of elections and the best tool at our disposal to understand public opinion, they are also used in everyday language as synonyms for public opinion polls.

The origins of the scientific study of pre-election polls date back to 1940s (Jackson 2015). Since then, the increase in the number of pre-election polls has been remarkable. However, pre-election polling has been facing a conundrum since it has started to be used frequently. On the one hand, they are a source of information and receive broad coverage in media. On the other hand, they are subject to skepticism and criticism about the precision of their estimates and oftentimes their biases in favor of particular political parties or candidates. Skepticism and criticisms toward polls and pollsters are also common in Turkey. Notably, politicians often blame pollsters for misconduct. Indeed, even elites from political parties with vastly different ideological appeals hold the same views when it comes to criticising polls and pollster performance. For instance, shortly before the June 2019 mayoral elections, both the incumbent Adalet ve Kalkınma Partisi (Justice and Development Party, AK Party) and the main opposition Cumhuriyet Halk Partisi (Republican People's Party, CHP) warned the public to disregard the pre-election polls and cast their votes on the election day (T24 2019; Torun 2019). Indeed, those criticisms about

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Replication data are available online at https://dataverse.harvard.edu/dataverse/iremaydas.

pollsters and the polling industry in general reflect concerns about that pre-election polls might affect voting behavior. However, polls' effect on vote preferences and turnout has been a controversial and long disputed topic in the literature on voting behavior.

This thesis's primary goal is to shed light on these various claims about the inaccuracy of pre-election polls in Turkey. Although evaluating polls is challenging, 'The Total Survey Error' paradigm can provide a guideline in designing, conducting, and assessing polls. This paradigm is a conceptual framework designed to minimize survey errors and maximize data quality within fixed and known constraints. Many researchers have proposed different typologies for the Total Survey Error paradigm, one of the commonly used of which is however developed by Groves (2009, 39-41). It is based on the two inferential steps. First, answers to survey questions should correctly reflect the characteristics of the respondents. Second, the characteristics of the respondents should reflect the larger, target population from which they are sampled. Surveys are subject to errors if there is a problem in any of these steps. "Measurement errors" or "observational errors" occur when respondents' answers differ from the measurement of interest. "Representation errors" or "non-observational errors," on the other hand, occur when respondents in the survey cannot portray the larger group about which researchers would like to make inferences. In fact, all decisions made at each stage of a poll have an effect on either observational or non-observational errors. For instance, if the field dates of a poll do not include weekends, the sample tends to miss the working-class citizens (Traugott 1992). Thus, such a survey design would pose a threat to the representation of the target population. To understand and explain numerous sources of errors that can emerge from designing, conducting, and analyzing survey data, Total Survey Error is the dominant paradigm in survey research. It comprises both statistical and non-statistical properties in evaluating surveys (Groves and Lyberg 2010).

Poll aggregation methods have been developed to reduce the uncertainty of estimates and improve the predictive power of pre-election surveys. Poll aggregation methods tend to present more precise estimates than individual polls for several reasons. First, individual polls measure attitudes and behaviors at a specific time. Therefore, temporal changes in attitudes and behavior are more difficult to monitor in individual polls (Pasek 2015). Second, poll aggregation may reduce various errors in individual polls by employing poll-level data (Jackson 2015). Third, increased sample size in poll aggregation decreases the error rate (Hillygus 2011; Jackson 2015).

On the other hand, although a poll of polls is a useful forecasting tool, there is no

consensus about how to do that. One way to analyze aggregated data is by taking the average of the polls. However, this method is based on the assumption that the quality of polls is equal. An alternative method is Bayesian models depending on prior information such as economic indicators, approval ratings, and multiple simulations. Lastly, another method used in polls of polls is the LOESS (locally weighted scatterplot) smoothing. In it, the estimates are produced by assigning greater weights to nearest data points (Jackson 2015).

While scholarly interest in poll accuracy and quality has also grown considerably especially in the last decades, scholarly works on pre-election polls in Turkey are still scarce. Few studies on pre-election polls (Balcı and Ayhan 2004; Çarkoğlu and Yıldırım 2018; Göksu 2018; Görmüş 2016; Küçükkurt, Bir, and Yeles 1988; Stratejik Düşünce ve Analiz Merkezi (SDAM) 2018; Taymaz 2015; Moral, Forthcoming) often employ unreliable data with significant inconsistencies between their and polls estimates. This thesis extends the scholarship on survey research in Turkey by examining the pre-election polls in Turkey between 2011 and 2019. To such end, firstly, I employ a revised version of the CNN's Transparency Index (CNN 2019) for evaluating the pre-election polls in Turkey as it offers a detailed understanding of the survey methodology and is based on the Total Survey Error paradigm. CNN's Index includes the following items: name of the pollster, sponsor of the survey, sample size, field date, data collection method and mode, target population and sampling frame, weighting variables and their sources, the proportion of telephone interviews completed on a mobile phone, survey/interview verification tools, margin of error, availability of survey questions, and use of quotas and their respective sources.

Each question in the CNN Index is valuable for understanding poll data quality. More specifically, each item has an effect on observational and non-observational errors. For instance, the sampling frame and sampling method are keystones of representative samples. Ideally, a sampling frame should list all members of a target population, and members of the sampling frame should have a fixed and non-zero chance to be selected into the sample. Likewise, question-wording, response alternatives, ordering of questions, and response categories all have significant implications for measurement quality. For instance, leading questions may result in a high measurement error.

Although CNN's Index very well covers such potential problems from the perspective of the Total Survey Error paradigm, I had to make some adjustments in grading to make it more applicable to common polling practices in Turkey that differ from those in the US. Language of the survey, minimum subset size, design effect, availability of full questionnaire, interviewer instructions/programming for all questions,

re-contacting attempts, and survey verification tools are not reported by the examined polls from Turkey. Accordingly, if no pollsters had reported an item, they all received the same point on this item. If no pollsters report an item by providing sufficient information, the most detailed yet partial information was given the highest point. For instance, full text of the questionnaire and interviewer instructions/programming for all questions were not available in any of the polls examined in this study, but some pollsters reported multiple questions from their surveys. In these cases, they receive the highest grade, relatively to those who do not report any information.

The dataset employed in this study was compiled through a search of an extensive list of online newspapers, pollsters' official websites and Twitter accounts, and web archives for deleted content. All pre-election polls in the dataset were conducted after the election's official announcement and report major parties' or candidates' vote shares. To increase the reliability of the coding and consistency of the polls, some polls were omitted from the analyses. For instance, I do not take into account several polls if they were published in a single source, or if the pollster's name is missing, hence it is not possible to cross-check whether it was actually conducted.

The dataset I compiled is thus both novel and comprehensive, as it also covers all the necessary information in the revised CNN Index. It covers the 2011 General Elections, 2014 İstanbul Mayoral Elections, 2014 Ankara Mayoral Elections, 2014 Presidential Elections, June 2015 General Elections, November 2015 General Elections, 2018 General Elections, 2018 Presidential Elections, 2019 İstanbul Mayoral Elections, 2019 Ankara Mayoral Elections, and June 2019 (Repeat) İstanbul Mayoral Elections. Examining a total of 374 polls conducted by 52 pollsters between 2011 and 2019 from 11 elections, the analyses show that Turkish pollsters do not report sufficient information regarding how their polls were conducted. In the empirical analyses, I employ the nearest neighbor estimation method that smoothens the curve over the course of the examined campaign period. A least-squared fit is used to such end. Besides, this model allows for using additional analytical weights. I use three weighting methods based on sample size, revised CNN score, and pollster experience, and assess their usefulness for forecasting electoral outcomes. Despite the poor practices in reporting and conducting pre-election polls, in line with the theoretical and methodological expectations (Jackson 2015), however, poll aggregation produces more precise estimates than the individual polls.

High-quality surveys are not the ones that produce the most accurate estimates but those that employ the most robust scientific methodology. Although improving the quality of electoral forecasts is possible with the help of various methods like a poll

of polls, it should be noted that the quality of poll aggregation also depends on the quality of individual polls. Therefore, respecting the internationally recognized principles and procedures of survey methodology is the most crucial part of survey research. Accordingly, methodological transparency is sine qua non for the public and researchers to evaluate the polls. As a matter of fact, it is the transparency of methodological choices that helps us understand how the quality of polls varies. Therefore, this study aims to encourage pollsters and survey researchers to employ the so-called gold standards of survey research.

To sum up, this thesis emphasizes the importance of scientific methods in designing and conducting a survey and the transparency in reporting polling procedures and findings. Moreover, it seeks to contribute to the Turkish politics literature by taking a closer look to the reporting practices of all publicly available pre-election polls in Turkey for all elections conducted between 2011 and 2019.

This thesis consists of two empirical chapters. The next chapter firstly provides an examination of previous research on poll accuracy and the Total Survey Error paradigm. After explaining a total of 16 questions in the CNN's Transparency Index and its usefulness as a survey quality assessment tool, it presents an examination and related discussion of survey reporting practices in Turkey. Chapter two also presents the poll and pollster grades for the 374 polls conducted between 2011 and 2019 and based on the questions in the CNN Index revised to better confirm to the polling practices in Turkey.

Chapter three seeks to answer whether and, if so, to what extent pooling the polls together helps scholars make more accurate election forecasts. Following a detailed explanation of the data collection and research methodology, chapter three presents several polls of polls for each of the examined elections and discusses the findings in detail.

Chapter four summarizes the findings from the previous chapters and concludes that pooling the polls provides a useful tool for forecasting election outcomes even when some (if not most) individual polls are inaccurate in their estimates. The empirical findings of this study are in line with the previous research in other countries. As the findings suggest, a poll of polls provides more precise estimates, especially when the election date is closer. Lastly, the concluding chapter also discusses the potential limitations and roadmaps for future research on the topic.

2. ASSESSING THE QUALITY OF SURVEY RESEARCH IN TURKEY

> "To consult a statistician after an experiment is finished is often merely to ask him to conduct a post-mortem examination. He can perhaps say what the experiment died of" (Fisher 1938, 17).

In this first empirical chapter, I examine the performance and reporting practices of the pre-election polls in Turkey between 2011 and 2019. I start with providing background information on poll accuracy and the Total Survey Error paradigm. Then, I discuss the CNN's Transparency Index as a survey quality assessment tool and provide information on survey reporting practices in Turkey. In the last part, I use a revised version of the CNN's Index to assess several pre-election polls in Turkey.

Pollsters have often been blamed for the inaccuracy of their estimates. In particular, politicians frequently accuse pollsters of wrongdoing. For instance, during the most recent election campaign in Turkey, shortly before the March 2019 mayoral elections President Recep Tayyip Erdoğan said:

> "Survey companies will be wrong in their prediction for this election. Because when we look at the information from the surveys, there are terrible differences between them. There are so many differences that I cannot even say [they are] close to each other" (NTV 2019).

Accusing some pollsters of misreporting their estimates intentionally, Ankara mayoral candidate Mehmet Özhaseki also noted that

> "[t]here are two types of surveys: one type is manipulative and another

type is real surveys" (Yeniçağ Gazetesi 2019).

Likewise, İstanbul mayoral candidate Binali Yıldırım emphasized the effect of polling estimates on voter behavior:

> "Surveys are used for manipulation. I think this is disrespectful for voters. Manipulating voters does not seem right to me" (TRT Haber 2019).

Lastly, Milliyetçi Hareket Partisi's (Nationalist Movement Party, MHP) Vice President at the time, Mevlüt Karakaya highlighted the importance of methodological disclosure:

> "Pollsters publish survey result every three days. They do not disclose the sponsor of the survey. However, the sponsor of the survey and scientific procedures of the survey such as sampling and analysis methods should be reported... There should be a legal regulation and pollsters should report their research according to scientific principles. Otherwise, polls are simply manipulation" (Sözcü 2019).

These criticisms are not unique to the March 2019 elections. Regarding the polls for the June 2018 presidential and general elections, MHP's Vice President Semih Yalçın blamed pollsters for being biased against his party:

> "Since the polls become common, pollsters are biased against MHP because they have [other] political sponsors. MHP's vote share has always been shown low in polls. Although it is rare, some fair pollsters report objective predictions." (Yeniçağ Gazetesi 2018).

During the election campaign, İyi Parti's (Good Party, IYI) Secretary-General at the time, Aytun Çıray also noted that

> "[t]he purpose of these manipulative surveys is creating an electoral picture where only two candidates compete" (Odatv 2018).

Politicians had raised criticism in earlier election campaigns as well. For instance, in 2011, Devlet Bahçeli criticized the polls that show AK Party well ahead of the other political parties stating that

> "[t]hese surveys manipulate the citizens and enable AK Party to come to power" (Hürriyet 2011).

During the campaign period for the April 2017 referendum, the main opposition party CHP's leader Kemal Kılıçdaroğlu also remarked that

> "[a] large amount of manipulation will be done this week. Big organizations will announce polls, in which 'yes' is shown very ahead" (Diken 2017).

Politicians' criticisms and negative comments about pollsters and polling industry reflects concerns about that pre-election polls may affect voting behavior. Indeed, the effect of polls on vote preferences has long been a controversial and disputed topic in the literature on voting behavior. As a source of information, pre-election polls help voters form their opinions about other citizens' preferences in elections. Published polls may thus have a variety of effects on voting behavior. Previous research on the topic is divided into two broad categories on the effect of polls: electoral participation (i.e., turnout) and vote choice. The studies focusing on the effect of polls on turnout suggest that voters are more likely to vote when they believe they have higher confidence in their influence on the election outcome. Therefore, turnout is expected to be lower in uncompetitive elections (Blais, Gidengil, and Nevitte 2006). Although a number of studies suggest no significant relationship between public opinion polls and voter turnout (Ansolabehere and Iyengar 1994; Fleitas 1971; Gasperoni and Mantovani 2015; Harder and Krosnick 2008; Van der Meer, Hakhverdian, and Aaldering 2015), a recent natural experiment in France (Morton et al. 2015) provides strong evidence that exit poll information decreases turnout in presidential elections. Before the change in electoral legislation in 2005, some French territories had voted after the exit poll information had been available from mainland France. The findings show that voters are less likely to vote when they think their votes would not change the outcome of the election.

The effect of polls on vote preferences are studied under three different strands. First, the 'bandwagon effect' or 'contagion effect' that refer to public opinion polls may

make voters vote for the candidates or parties who are more likely to win (Schmitt-Beck 2015). The second one is the so-called 'underdog effect,' which suggests that public opinion polls may make voters vote for the candidates or parties who are less likely to win (Schmitt-Beck 2015). Some previous research provide empirical support for the 'bandwagon effect' (Marsh 1985; Morton et al. 2015; Rothschild and Malhotra 2014), whereas others argue for the 'underdog effect' (Lavrakas, Holley, and Miller 1991; Sanders 2003). In fact, several students of political behavior argue that lower political sophistication is linked to the underdog effect, and higher sophistication is related to the bandwagon effect (Navazio 1977; Schmitt-Beck 1996). The third line of research is related to 'strategic' or 'tactical voting' that refers to voting for the 'second-best' alternative when the first preference has little chance in the election (Moy and Rinke 2012). Previous research provides support for strategic voting and especially individuals' sophistication level has been found to be related to the strategic voting (Andersson et al. 2006; Meffert and Gschwend 2011). In sum, previous literature focusing on the relationship between public opinion polls and electoral behavior reveal contradictory empirical findings with respect to its effects on voter turnout and voting behavior (Moy and Rinke 2012; Mutz 1998, 179-264).

The increasing lack of confidence in pre-election polls is not unique to Turkey. Similar issues have been raised in many democratic countries especially in the last decade. In particular, polling estimates for the 2015 UK general elections and the 2016 US elections were heavily criticized (Barnes 2016; Easley 2016). However, Jennings and Wlezien (2018) show that the pre-election surveys for these two elections, among many others in a total of 32 countries between 1942 and 2017, are just as accurate as they have always been. On the other hand, Shirani-Mehr and her colleagues (2018) argue that the average (absolute) polling errors in many polls on those elections were often higher than the recorded margins of error.

Although surveys are accurate as they have always been, survey research has recently been tackling with major methodological problems. There are two main sources for those: First, although the number of surveys has been growing, the probability of participation in surveys has been declining (Pew Research Center 2012). There is a significant risk for non-response bias if few citizens agree to participate and do differ systematically from those who do not. Secondly, with the development of new methods to conduct cheaper and simpler surveys, it becomes more difficult to make claims about representativeness, which is a sine qua non for drawing probabilistic inferences about target populations.

As survey research is facing with methodological threats, the 'Total Survey Error'

framework can provide guidance to scholars and practitioners. The Total Survey Error paradigm is a conceptual framework designed to minimize survey errors and maximize data quality within fixed and known constraints. Total Survey Error is defined as "the accumulation of all errors that may arise in the design, collection, processing, and analysis of survey data" by Biemer (2010, 817). Many researchers have proposed different typologies for the Total Survey Error paradigm, one of the commonly used of which is developed by Groves (2009, 49-60). It proposes two main dimensions: observational and non-observational errors. The first category refers to the measurement aspect, and includes construct validity, measurement error, and processing error. The second one refers to the representation aspect, and includes coverage, sampling, and non-response errors.

Survey errors may arise in almost all decisions made at every stage of a poll by pollsters. In order to understand the sources of errors and determine data quality, it is thus necessary to reveal design decisions and practices. While there are no commonly agreed criteria for disclosure practices, various institutions create their own guidelines to promote methodological transparency. Some of the leading examples are from the American Association for Public Opinion Research (AAPOR), the European Society for Opinion and Marketing Research (ESOMAR), and the World Association for Public Opinion Research (WAPOR). For instance, AAPOR (2015, 4) summarizes the main reason for the necessity of disclosing the details about survey methodology as:

> "Good professional practice imposes the obligation upon all public opinion and survey researchers to disclose sufficient information about how the research was conducted to allow for independent review and verification of research claims."

Transparency initiatives have not just encouraged transparency but also have improved data quality. For instance, a polling expert, Nate Silver (2019) assigns higher grades to pollsters who are members of the AAPOR, National Council on Public Polls (NCPP), and Roper Center for Public Opinion. That is because he finds that more reputable pollsters who are members of these institutions have, on average, smaller average errors in predicting electoral outcomes. By providing the public with the necessary information, pollsters and journalists would also allow survey researchers and the public to assess polls more accurately. In fact, some scholars suggest that similar disclosure principles are needed in media coverage of polls (Vögele and Bachl 2020). Today many prominent media outlets such as The New York Times, ABC News, and CNN come up with their own standards for choosing

which polling estimates they would publish.

2.1 CNN's Transparency Index

There are many institutions intending to encourage methodological accountability and transparency in polls. One of the most prominent of those, CNN (2019) recently published a Transparency Index that includes a set of questions to be answered before it decides to publish a public opinion poll. In this thesis, I employ a revised version of the CNN's Transparency Index for evaluating pre-election polls in Turkey. The CNN Index provides a detailed understanding of the survey methodology, and it is based on the Total Survey Error paradigm.

However, CNN's Index does not include a separate item on non-response rates. The reason may be that there are two issues regarding non-response rates. First, some studies show no significant relationship between lower response rate and non-response bias (Biemer 2010; Gummer 2017; Keeter et al. 2006; Peytcheva and Groves 2009). Although, as noted above, lower response rates may pose a risk, non-response bias occurs if only respondents and non-respondents differ systematically. To understand the effect of non-response on polling estimates, researchers should also know the characteristics of non-respondents. To such end, Biemer (2010) suggests conducting follow-up studies to figure out whether non-respondents differ from respondents to a significant extent. Even though response rate is not the primary indicator of non-response bias, it should not be underestimated. For instance, Lau (1994) shows that the number of days and type of days (i.e., weekdays or weekends) for a poll being fielded influence survey accuracy. Similarly, Traugott (1992) suggests that midweek polls tended to produce a Republican bias in the 1992 presidential elections polls because the polls missed the working-class citizens who work on weekdays and usually vote for Democrats. In this regard, if non-respondents show different attributes than respondents, their systematic exclusion may result in non-response bias (Groves et al. 2009, 136). The second issue regarding non-response rates, unfortunately more prevalent in the Turkish case, is that almost none of the survey firms publish their response rates. Although the non-response rate may thus not be a marker of non-response bias, it is still crucially important in understanding any non-response error in any survey. However, as noted above, since no Turkish pollsters report their response rates, lack of item on response rates does not affect assessing pre-election polls in Turkey.

2.1.1 Disclosure Items in CNN's Transparency Index

The CNN Transparency Index offers an in-depth understanding of the survey methodology and is based on the Total Survey Error paradigm. Each question in the CNN Index is useful for understanding poll data quality. CNN does not publish public opinion polls if the polls fail to address questions in the index. It promotes methodological accountability and scientific principles in the design, conduct, and analysis of surveys.

Before publishing a public opinion poll, CNN asks the following questions:

1. *Which survey firm conducted the poll?*

It is essential to know about the survey firm before publishing their findings. The firm could have a bad reputation as a result of poor performance in previous elections. Apart from past performance, the firm may have a (disclosed or non-disclosed) relationship with a political party or a candidate. Moreover, it is crucial for evaluating the credibility of pollsters by verifying their membership to transparency initiatives or professional associations.

Although some pollsters have a long history in polling industry, some others only appear in one election cycle and disappear after the election. Such untrustworthy practices increase the importance of the reliability of the survey firm in predicting elections. In this regard, Nate Silver (2014) weights polls using the pollster ratings based on the pollsters' past performance, methodological preferences, house effect, herding practices,[1] and membership to transparency initiatives. Consequently, weighted polls provide more precise estimates because the estimates of the so-called gold-standard pollsters are usually more accurate (Enten 2014).

2. *How were respondents interviewed –by live interviewers on the phone, IVR, online, self-administered questionnaire, or another method?*

Each data collection method has its own relative disadvantages and advantages. The choice of data collection method should be based on the research question, and its potential cost and error implications (Groves et al. 2009, 150). Survey administration mode has an effect on coverage, non-response, and measurement

[1] Here it should be noted that herding is the tendency of some polling firms to be influenced by others when issuing polling estimates. A pollster might want to avoid publishing a poll if it perceives that poll as an outlier. Or, a pollster with a poor methodology may choose to make ad hoc adjustments so that the poll is more in line with methodologically stronger ones.

errors. Therefore, identifying the effects of each survey mode on Total Survey Error provides both the researchers relying on survey data and the mass public with higher interpretive power in evaluating polling estimates (Biemer 2010).

In terms of coverage implications, face-to-face surveys are considered the gold standard. However, even face-to-face surveys cannot include all sub-groups (e.g., military personnel, institutionalized people) (Groves et al. 2009, 164-164). Since the cost of face-to-surveys is too high, telephone surveys have become increasingly more common in the last 50 years. However, the coverage of the landlines and telephone surveys relying on those has been decreasing since the early 2000s. As such, people who do not have landline telephones differ from those with telephones sociodemographically (Blumberg et al. 2007, 64-71). Mokrzycki and his colleagues (2009), for instance, demonstrate that landline telephone surveys were biased against Obama in the 2008 election. In a similar vein, Mohorko and her colleagues (2013) employ the Eurobarometer data and conclude that the coverage bias in landline surveys has increased over time as the number of cell-phone-only individuals has grown.

For mail surveys, there is no sampling frame that covers all the US (or Turkish) population. Hence, mail surveys are usually used for smaller populations who are in available sampling frames. Indeed, the coverage implication of mail surveys is directly affected by the quality of the sampling frame (Groves et al. 2009, 164). Internet surveys, for instance, pose a more massive threat to representation. Couper (2000) explains two issues regarding web surveys: 1) not everyone in the target population has access to the Internet, 2) it is hard to have a sampling frame even if everyone has access. The first issue refers to coverage bias. Individuals who do not have access to the Internet tend to differ in demographic and financial terms from those with such an access (Couper et al. 2007). The second issue refers to that there is no sampling frame for web surveys either.

In terms of the non-response dimension, face-to-face surveys have higher success, followed by telephone, then mailed surveys (Groves et al. 2009, 166). Web surveys yield the lowest response rate (Manfreda et al. 2008, 166). The absence of an interviewer could explain the lower response rate. That is because interviewers could provide legitimacy and make it easier to complete a survey for respondents (Groves et al. 2009, 166).

Groves and his colleagues (2009, 168-172) explain three sorts of effects of data collection mode has on measurement quality: completeness of data, social desirability bias, and response effects. Missing data are less prevalent in interviewer-administered surveys than in self-administered surveys. Existence of an interviewer can also make survey questions easier to understand and answer. However,

self-administered surveys yield more accurate results than interviewer-administered surveys for more sensitive questions.[2] Lastly, response effects imply the effect of response orders, question-wording, and other contextual factors on survey response. In aural modes, respondents are more susceptible to contextual effects because they hear what the interviewer says. In contrast, they see all response options and they can start any questions in visual modes. Web surveys differ from other modes in this regard because they provide survey researchers with various design options –e.g., randomization of response orders, limiting the number of questions on a page. Thus, the design becomes more important in web surveys (Couper 2000).

3. Who paid for the survey and why was it done?

One of the key issues in survey research is who sponsors the field research and whether the sponsor is linked to a political party or an interest group (Traugott and Lavrakas 2000, 134-144). An ideologically-leaning sponsor would reduce the legitimacy of a poll, as the survey could be designed to manifest predetermined results for the purposes of the politically oriented sponsor. Previous research has shown that survey's sponsor has an effect on the non-response error (Groves et al. 2012). Moreover, surveys sponsored by universities and government organizations, which are more reputable in the eyes of potential respondents, tend to have higher response rates than those sponsored by commercial organizations (Fox, Crask, and Kim 1988; Groves et al. 2009, 200-201; Lavrakas 2008, 756-757).

4. How many people were interviewed for this survey?

Variance and standard error are two important properties of surveys as a function of their sample sizes. As the sample size increases, variance and standard error decrease. This decrease means that larger samples reduce uncertainty. Therefore, pollsters should decide how much uncertainty is bearable, given a fixed cost. In a simple random sample, the variance can be estimated as:

$$v(\widehat{y}) = \frac{(1-f)s^2}{n} \tag{2.1}$$

In the formula, s^2 is the variance of the distribution, n is the sample size, f is the sampling fraction. It is impossible to know s^2, but previous polls or a pilot study can

[2]Social desirability bias is the tendency of respondents to overreport socially desirable (e.g., turnout) and underreport socially undesirable behaviors. It increases with the involvement of the interviewer.

be used for approximating s^2. Variance, standard error, and confidence interval are determined by the variability of $y_i(s^2)$ and the sample size. Hence, a larger sample has lower variance and standard error with narrower confidence intervals (Groves et al. 2009, 103-105) –i.e., more precise polling estimates.

The most common approach to ex ante determine sample size is to decide the value of standard error, variance, and/or confidence interval. Some of the prevalent ways of determining sample size are setting a coefficient of variance to less than 0.1 and setting confidence interval to 90% or 95% (Lavrakas 2008, 782; Groves et al. 2009, 408-409).

Another important implication of the sample size is the sampling error. Sampling error has two components: sampling bias and sampling variance. Sampling bias occurs when some individuals in the sampling frame have no chance to be selected into the sample. Sampling variance, on the other hand, is the variability of the sampling distribution of a variable. There are four factors that affect the sampling error: whether the sampling method is probabilistic, whether stratification is used, whether clustering is used, and the sample size (Groves et al. 2009, 56-58). The sampling error or the margin of error, to use the more frequently used term, in a simple random sample is estimated as:

$$\text{Margin of Error} = Z\sqrt{\frac{p(1-p)}{n}} \tag{2.2}$$

Where p is the proportion of interest, n is the sample size, and Z is the critical value associated with the confidence interval. The margin of error decreases as the sample size increases. However, this measure is only accurate with simple random samples. Moreover, it is only one of the sources of many possible errors from the perspective of the Total Survey Error approach.

5. In what language(s) were respondents interviewed?

Multilingual surveys ensure more representative samples by reducing non-response rate among linguistic minorities. They increase the measurement quality in two ways. Firstly, "I don't know/I am undecided" answers decrease since more respondents fully understand the question. Secondly, respondents might give more honest answers in their mother tongue, especially for sensitive topics (Bendixen 2003).

6. *Please provide a copy of the full text and interviewer instructions/programming for all questions included in this survey release.*

Question-wording, response alternatives, the order of questions and response categories, interviewer instructions, and navigational instructions all have significant implications for measurement quality. For instance, Schuldt and his colleagues (2011) conduct a question-wording experiment and find that Republicans are more likely to deny 'climate change' if it is worded as 'global warming'.

Groves and his colleagues (2009, 243-250) highlight some essential points in wording questions. They suggest using a simple language, making questions as specific as possible, avoiding double-barreled questions, and asking general questions earlier than specific questions. Moreover, AAPOR (2014) advises avoiding leading questions and leading question orders that are likely to introduce bias. Therefore, disclosing the full questionnaire and interviewer instructions are necessary to understand data quality. Moreover, it becomes more difficult, if not impossible, to compare vote intention questions asked using different wordings.

7. *When was your survey conducted?*

A survey collects information at a particular time, and people's attitudes, beliefs, and behavior are likely to change over time. Moreover, pre-election poll errors decline with the increasing temporal proximity to the election date (Jennings and Wlezien 2018). Especially for the undecided voters who are politically less sophisticated and less interested, election campaigns are effective in informing and helping voters make decisions over the course of electoral terms and especially campaigns (Arceneaux 2006). In addition to the evolution of voters' preferences, Banducci and Steven (2015) show that survey response rate and data quality increase as the election day gets closer as a result of an increase in political interest. Therefore, lower levels of non-response and survey satisficing reduce absolute error.

Moreover, there is a notable difference between parliamentary and presidential elections. Voter preferences are formed earlier in the parliamentary elections. In the presidential (and mayoral) elections, however, the candidates other than the incumbents are not known until their names are announced. Even after new candidates are known, it takes more time to develop attitudes toward them. In contrast, political parties and their ideological and issue positions are generally familiar to voters. Therefore, voters' decisions tend to be more stable in parliamentary elections (Jennings and Wlezien 2016; Erikson and Wlezien 2012, 190-191).

8. *What is the source of your sample for this survey, and by what method were respondents selected? Please be as specific as possible, and if via web panel(s), please include a description of how the panelists were recruited. If your study was conducted online and included respondents were chosen via routers, approximately what percentage of respondents were directed to the survey via routers?*

A sampling frame includes persons in the target population. Ideally, a sampling frame lists all members of the target population. However, most, if not all, sampling frames have missing elements and ineligible units, which lead to coverage error (Groves et al. 2009, 54). For instance, when the target population is the non-institutionalized population of Turkey aged 18 years old or older (i.e., voting-eligible population), using a telephone frame would exclude people who do not have a telephone. As noted above, coverage bias occurs when people with telephone and people without telephone vary systematically in their political attitudes or behavior.

Members of a sampling frame should have a fixed and non-zero chance to be selected into the sample, and designers should know to this probability of selection to have a representative study. However, it is not always the case. In very broad terms, there are two sampling methods. One is the probabilistic sampling methods, where people have non-zero and fixed chances to be selected. The other one is non-probabilistic methods based on more convenient techniques to select participants, and the probability of being selected is unknown. Non-probability methods are less accurate than probabilistic methods (Groves et al. 2009, 409).

Web surveys are more prone to non-observation errors, and representation is thus a more serious challenge (Groves et al. 2009, 164-165). Thanks to methodological developments, recruiting respondents through web panels nowadays provide more representative samples. However, other methods, such as opt-in web surveys, are more inadequate in terms of representation and pose an important self-selection bias (Couper and Miller 2009, 54). As such, it is crucially important to provide more details about the source and methods used in web surveys.

9. *If any quotas were applied to sampling or interviewing, at what stage were they applied, what variables and targets were used, and what is the source of your estimate of the target quota?*

Quota sampling is a non-probabilistic method, which is frequently consulted to increase representativeness by pre-determining some known characteristics in the target population and ensuring the sample represents those. However, unobserved

characteristics of respondents might correlate with survey questions or with their willingness to participate in the survey. For instance, vote choice might correlate with being at home when the interviewer knocks on the door (Prosser and Mellon 2018). This is most likely the case, for instance, for housewives or retirees. Therefore, although they may sometimes produce similar estimates with probabilistic methods, the literature fails to explain when (Groves et al. 2009, 409-410).

Even after the post-survey adjustments, a quota sample would not be representative of the target population. Therefore, it is not surprising that probability sample surveys are more accurate than non-probability ones (Cornesse et al. 2020; Groves et al. 2009, 409; Dutwin and Buskirk 2017, 409). Moreover, via (non-probabilistic) selection of respondents by interviewers, bias can occur to larger extents (Langer 2018, 8). For example, interviewers may select to interview individuals who seem more likely to participate or may select those closest to them. Lastly, confidence intervals and margins of error cannot be calculated due to unknown sampling biases and non-random selection.

10. *What is the universe of people you are trying to survey, and what makes you confident that the sample source represents that universe?*

A target population is the people that survey estimates are to be generalized to. Therefore, the target population must be clearly identified. Some groups might be excluded from the target population because they cannot be interviewed. For instance, household surveys in Turkey and in other countries usually exclude institutionalized people and military personnel, because they are hard, if not impossible, to reach.

A sampling frame includes members of the target population. However, a sampling frame does not catch all the elements in the target population and/or it includes foreign (ineligible) elements (Groves et al. 2009, 54-55). The representativeness of the sample thus depends on the quality of the sampling frame (Lavrakas 2008, 790-791). A sampling frame can be a list of telephone numbers, postal addresses, or e-mails. Each frame, on the other hand, would have its own drawbacks. For example, address lists might not include new or unlicensed constructions or may be outdated.

11. *If surveys were conducted by telephone, what percentage of interviews were conducted via calls to cellphones? If surveys were conducted online, were respondents allowed to complete the survey via mobile browsers, and approximately*

what share of your respondents did so?

Both ESOMAR and WAPOR (2014) indicate that the proportion of landline and mobile telephone owners should be taken into account in telephone surveys. Otherwise, inherent coverage bias increases. In a similar vein, the survey's accessibility from mobile browsers has important consequences in terms of coverage of web surveys. If an online survey is only reachable from a personal computer (PC), it would exclude people who do not own a PC.

12. *If surveys were conducted by telephone, how many callback attempts did a sampled number receive before being retired?*

In telephone surveys, the interviewer cannot always contact the appointed respondent and call again. Multiple callbacks increase response rate (Groves et al. 2009, 211; Lavrakas 2008, 225), therefore decrease non-response error (Lavrakas 2008, 697).

13. *If surveys were not conducted by a live interviewer, what do you do to ensure your respondents are real people and are paying attention to the survey?*

Survey bots randomly fill out online surveys. Moreover, some people use automated form fillers. Survey bots and automated form fillers are more likely to introduce measurement errors. Therefore, researchers should have a strategy for fake surveys. One possible solution is using Commonly Completely Automated Public Turing (CAPTCHA) that detects whether the respondent is a real person or not.

For face-to-face and telephone interviews, interviewers' training, experienced supervisors, and interview/survey verification methods are more important, especially for coverage and non-response errors (Groves et al. 2009, 291). Interviewer training should include how to conduct interviews and how to increase the cooperation of participants by gaining their trust. Supervisors should monitor the interviewers and verify the reliability of their interviews. Inadequate or fraudulent interviewers should be dismissed (ESOMAR and WAPOR 2014). For interview/survey verification, supervisors can arrange a second visit or a call to randomly selected participants constituting a pre-determined proportion. Moreover, the very availability of the verification process is likely to motivate interviewers to be more careful (Lavrakas 2008, 945).

14. *What is your estimate of this survey's error, how is it calculated, and why is*

this an appropriate error estimation for your survey? If you are reporting a margin of sampling error, has it been adjusted for design effects?

Pollsters usually report their margins of sampling error. However, it is just one of several errors from the perspective of the Total Survey Error paradigm. Other errors might arise due to several other components of the measurement and representation aspects such as question wording, response order, data processing, non-response, and interviewer involvement. Moreover, the margin of error calculation is based on the assumption of simple random sampling. Lastly, another source of the survey error, the design effect, which is a measure of how much the estimated sampling error is different from the sampling error can only be estimated based on random sampling (Stapleton 2008, 346; Groves et al. 2009, 109; Lavrakas 2008, 193-194).

15. *If your survey has been weighted, please list the weighting variables and the source of the weighting parameters. If your survey has not been adjusted for education, please explain why and provide an unweighted frequency for education distribution among your respondents.*

Groves and his colleagues (2009, 331) define weighting as "the adjustment of computations of survey statistics to counteract harmful effects of non-coverage, non-response, or unequal probabilities of selection into the sample." In short, weighting is used to more accurately represent the target population when the sample overrepresents or underrepresents some persons. The source of data based on which weights are calculated therefore plays a key role in successful weighting practices. Usually, government censuses (or surveys in the case of the Turkish Statistical Institute) are available for demographic variables.

Educational attainment, for instance, is a strong correlate of voter behavior in many countries including Turkey. More educated people are more likely to participate in a survey and in politics. Pre-election polls that did not adjust their estimates for the education level in the 2016 presidential elections in the US failed to forecast the election results because they overrepresented the votes for Hillary Clinton (Kennedy 2020). Since education is a robust determinant of vote choice, correctly weighting for education would have increased the quality of the surveys.

16. *Is there a minimum unweighted sample size you require before releasing any subset estimates, and if so, what is it?*

Societies consist of many different ethnic, linguistic, religious, political groups. Public opinion polls are affected by the smaller sizes of these sub-groups in prediction.

The margin of error for those groups is much higher because of their smaller sizes. Because the margin of error is higher in smaller sample sizes, the conclusions drawn for a small subset may not be meaningful. Pollsters should not make inferences about sub-groups if their sizes are too small for statistical reliability. Moreover, if pollsters determine the minimum subset size is too high, the sample might exclude some groups.

2.2 Reporting Practices in Turkey

To the best of my knowledge, no previous study focuses on the reporting practices of pollsters in Turkey. Therefore, I collected several pre-election polls and available information regarding their methodology. I will explain the data collection procedures in the next chapter. In brief, the dataset includes 374 polls for 11 elections in Turkey between 2011 and 2019.

In this section, I examine the extent to which polls' reporting meets the CNN Transparency Index disclosure requirements. To determine this, I assess each question in the index among the polls in the dataset. I also provide a detailed account of the distribution of reporting practices for each election. Moreover, I discuss the best and worst practices by giving examples from the pollsters.

2.2.1 Pollsters

In our dataset, there are a total of 52 pollsters. The most experienced one is Konda with 34 years of experience, the second one is PlusMayak with 33 years, and the third one is SONAR with 32 years of experiences. The newest firm is TEAM, which was founded in 2019, whereas Foresight, Nev Bilgi, and Piar have only two years of experience. The average years of experience is 13, and the median is 10.5. Interestingly, some firms only conduct polls for a single election, then disappear. These are Ajans Press, Anka, AREDA, Benenson, DESAV, Dİ-EN, İKSara, Marmara, Nev Bilgi, Pananaliz, Paradigma, Statü, and USESAM.

There is no scientific research on the credibility of pollsters in Turkey either. Newspapers usually publish news stories entitled "Which pollsters best predicted the

election outcomes?" and report a few pollsters' estimates on the election. An answer to this question, however, cannot be given or trusted because the evaluation criteria by such news media outlets are not known and the surveys are not examined systematically and using scientific methods.

Türkiye Araştırmacılar Derneği (Turkish Researchers' Association, TÜAD) is a professional organization that has a right to control its members' survey practices. However, only Ada, Aksoy, GENAR, İstanbul Ekonomi, Metropoll, Optimar, and Vera are members of the TÜAD among the 52 pollsters examined in this study. Aksoy, İKSara, Metropoll, Optimar, and Varyans are members of the ESOMAR. Although being a member of a transparency initiative is not the only indicator of scientific methods being employed, it provides credibility to some extent.

After the pollsters' poor performance in the 2014 Presidential Election, TÜAD (2014) invited them to share their research practices. Konda was the only firm to accept an investigation. TÜAD (2014) indicated that the studies of the pollsters that did not share their methods and procedures are not acceptable and warned the public to check pollsters' membership to TÜAD.

Table 2.1 shows the number of polls in our dataset according to the pollsters who have conducted at least 10 polls. These 14 pollsters alone constitute 68.45% of the examined polls. Among them, Gezici has reported the highest number of polls with a total of 36 polls, which is closely followed by ORC with 34 polls. The number of polls of all examined pollsters are presented in Appendix A.1.

Table 2.1 The Number of Polls Conducted by the Pollsters with 10 Polls or More

Pollsters	Polls	Pollsters	Polls
Gezici	36	SONAR	18
ORC	34	REMRES	14
Metropoll	22	Konsensus	13
MAK	21	Andy-AR	12
AKAM	18	Optimar	11
GENAR	18	Piar	11
Konda	18	A&G	10

Although there are many pollsters, some pollsters dominate the sector, while others emerge during an election period and then disappear. However, pollsters' experience or publishing more polls does not mean these pollsters are more transparent in reporting. Therefore, it is necessary to examine other standards of reporting.

2.2.2 Survey Mode

Survey mode practices in Turkey are different from those in the US. Since there is no sampling frame for telephone surveys (Şenyuva 2006), face-to-face surveys are more common. Besides, if the sampling method is based on Türkiye İstatistik Kurumu's (Turkish Statistical Institute, TÜİK) Adrese Dayalı Nüfus Kayıt Sistemi[3] (Address Based Population Registration System, ADNKS) or some sort of cluster sampling at the level two of the Nomenclature of Territorial Units for Statistics[4] (NUTS-2), household face-to-face surveys are the gold standard. Figure 2.1 indicates that 49.73% of the pollsters reported to have made face-to-face interviews. 13.10% of the examined polls are via CATI, 3.74% use mixed methods (face-to-face and CATI), 1.07% of the polls are web surveys, and 32.35% of the polls provide no information about their survey mode. The average of face-to-face polls increases to 73.52%, followed by the CATI with 19.37% and mixed methods with 5.53% when we exclude those with unreported numbers of respondents. Figure 2.1 shows that web surveys are not frequently used in Turkey (at least they are unlikely to be reported) since there are only four such cases in the dataset. The low number of web surveys could be the results of 1) pollsters' and their clients' awareness of its poor representation, 2) the challenge of detecting fake surveys, 3) purposefully non-reporting survey mode in web surveys to increase credibility.

[3]Until 2007, all population censuses were carried out once in one day by applying a curfew in Turkey. TÜİK has changed the method of population census to produce more accurate and up-to-date information. ADNKS system matches every resident in the country with their residence addresses by using the ID numbers.

[4]NUTS is a classification method for dividing countries into smaller regions in the European Union (EU) countries or candidate countries for statistical purposes. In Turkey, there are three divisions based on geographical, social, and economic similarities of regions. The NUTS classification covers 12 regions at NUTS-1 level, 26 regions at NUTS-2, and 81 regions at NUTS-3 level.

Figure 2.1 Distribution of Survey Mode

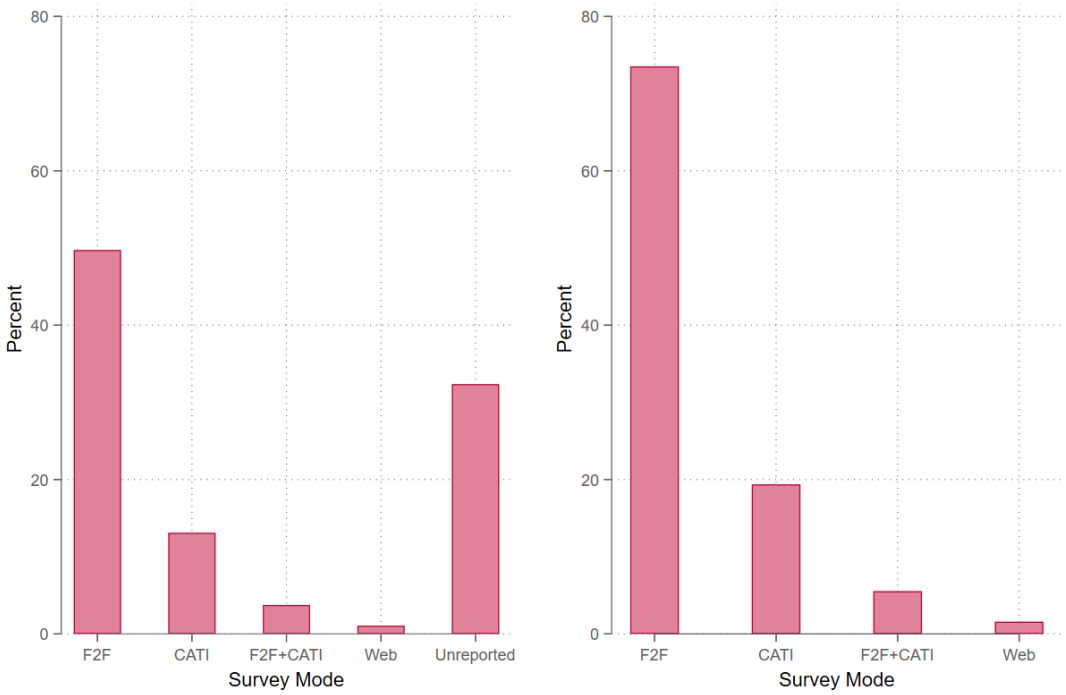


Table 2.2 shows the shares of the modes of the examined polls for each examined election. The highest rate of missing information is from the 2019 İstanbul Mayoral Elections. The average missing information for all mayoral elections on the other hand is 42.02%, which exceeds the grand mean. The highest rate of reporting survey mode is from the June 2015 Elections with 77.94%. Moreover, the June 2015 Elections have the highest proportion of face-to-face surveys, with 63.24%. CATI proportion is highest in the 2019 Ankara Mayoral Elections with 24%. Mixed methods and web surveys are below 10.00% in all elections.

Among the 186 face-to-face polls, 43 of them were conducted by visiting the sampled households. Konda has reported 17 such polls, whereas Gezici has reported 11 and A&G has reported seven polls conducted at respondents' households. On the other hand, ORC has reported a total of 31, Metropoll 16, Gezici 14, MAK 12, both GENAR, and SONAR eight polls (in a total of 143 face-to-face polls) without any details about their interview procedures. REMRES has reported the highest number of polls with six of the 14 mixed methods polls in our dataset. Each of Ada, Andy-AR, Argetus, and Konsensus reported to have conducted six polls among the 49 CATI polls. AKAM has not reported its mode in 14 polls, Gezici in 11, GENAR in 10, SONAR in nine, and Optimar in eight polls.

Non-reporting is higher in mayoral elections in comparison to general and presiden-

Table 2.2 Survey Mode in Each Election (%)

		F2F	CATI	Mixed	Web	Missing	N
2011	General	61.54	11.54	0.00	0.00	26.92	26
2014	Ankara	52.63	5.26	5.26	0.00	36.84	19
	İstanbul	47.83	4.35	4.35	0.00	43.47	23
	Presidential	62.50	9.38	0.00	0.00	28.13	32
2015	General (June)	63.24	11.76	2.94	0.00	22.06	68
	General (November)	46.34	14.63	4.88	0.00	34.15	41
2018	General	39.13	15.22	6.52	8.70	30.43	46
	Presidential	45.24	16.67	7.14	0.00	30.95	42
2019	Ankara	36.00	24.00	0.00	0.00	40.00	25
	İstanbul	32.00	16.00	4.00	0.00	48.00	25
	İstanbul (Repeat)	44.44	11.11	3.70	0.00	40.74	27

tial elections. Pollsters usually conduct polls in multiple cities for mayoral elections. One of the underlying reasons for pollsters' higher non-reporting of survey mode could be that they tend to report general information with fewer details. However, they might employ different survey modes for each city according to their budget and research objectives. For instance, they might use telephone surveys for distant cities but face-to-face for closer cities.

2.2.3 Sponsor

Figure 2.2 shows the share of reported sponsors of the surveys. 65.51% of the surveys have no sponsorship information. 29.41% of the surveys were conducted using pollsters' own resources, and 3.21% of the surveys reported other sources like newspapers and NGOs, whereas only 1.87% of the examined surveys report political parties as their sponsors.

Figure 2.2 Distribution of Survey Sponsors

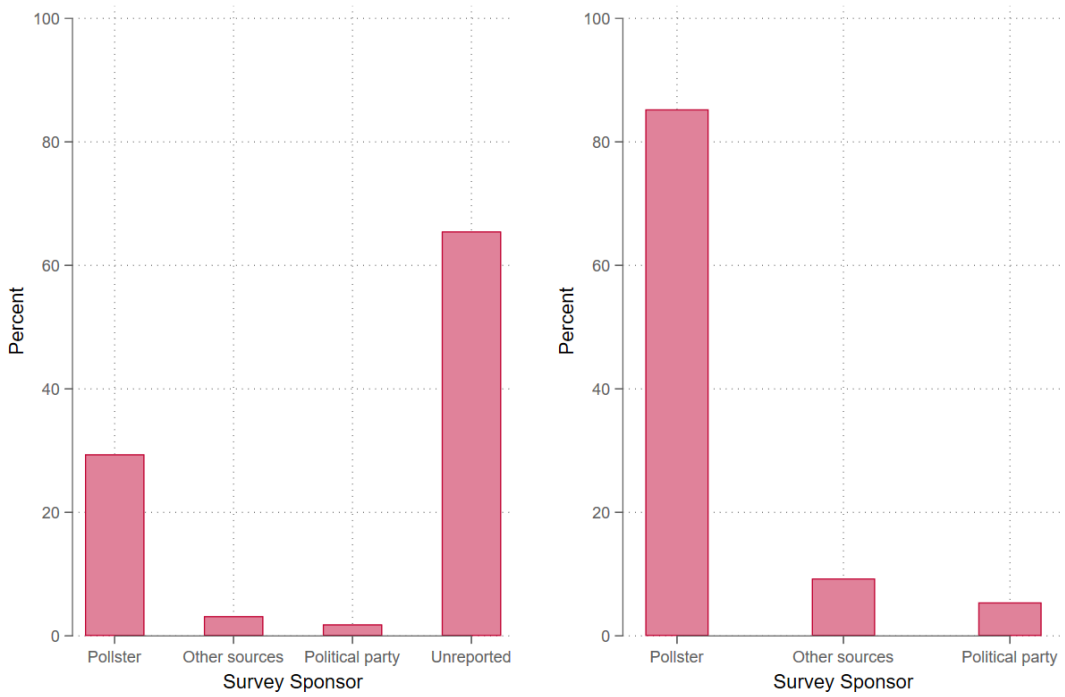


Table 2.3 shows the shares of all sponsor types in each election. The highest reporting rate is from the 2011 General Election. The pollsters' sponsors are reported for 57.69% of all surveys in 2011. The lowest reporting is for the 2019 Ankara Mayoral Elections with 12%.

Table 2.3 Survey Sponsor Types in Each Election (%)

		Pollster	Other	Political	Missing	N
2011	General	42.31	11.54	3.85	42.31	26
2014	Ankara	31.58	5.26	0.00	63.16	19
	İstanbul	17.39	4.35	0.00	78.26	23
	Presidential	34.38	0.00	3.13	62.50	32
2015	General (June)	39.71	2.94	1.47	55.88	68
	General (November)	36.59	7.32	4.88	51.22	41
2018	General	19.57	2.17	2.17	76.09	46
	Presidential	21.43	2.38	2.38	73.81	42
2019	Ankara	12.00	0.00	0.00	88.00	25
	İstanbul	20.00	0.00	0.00	80.00	25
	İstanbul (Repeat)	37.04	0.00	0.00	62.96	27

High Low

Among the 110 polls funded internally, both ORC and Konda have reported 17, Metropoll 15, GENAR 10, and MAK reported eight such polls. Together, Gezici, Andy-AR, and TÜSİAR have also reported seven internally-funded polls. Among all pollsters, Konda has the highest count of reporting sponsors. It has been reported that the firm's own resources are used for 94.44% of their polls.

12 polls were conducted by non-political external sponsors. Konsensus has conducted four polls for a Turkish newspaper Habertürk, AKAM has conducted two polls for a consulting firm, Pratik-A, and two polls for an NGO Aktif Toplum ve Alternatif Gelecek Derneği (Active Society and Alternative Future Association, ATAGD), Foresight has conducted two polls for Bloomberg News, Andy-AR has conducted a poll for Habertürk, and Metropoll has conducted a poll for a Turkish newspaper Akşam.

245 polls do not include any sponsor names. Gezici has not reported its sponsor in 29 polls, SONAR in 15 polls, AKAM and MAK in 14 polls, REMRES in 13 polls, Optimar in 11 polls, A&G in 10 polls, Mediar and Ada in nine polls, GENAR and TEAM in seven polls, Argetus, Konsensus, and PollMark in six polls. These pollsters alone constitute 63.67% of the polls with no sponsor information.

Benenson, Metropoll, PlusMayak, and LRC have conducted polls sponsored by CHP, and PollMark, GENAR have conducted polls for AK Party. Although the political sponsor rate is meager, it should be noted that the missing information rate for this criterion is too high. One possible reason for this high rate of non-reporting sponsor information could be that the pollsters might not want to reveal particular political parties as sponsors to look impartial or unbiased. Another explanation could be confidentiality arrangements between their clients and the pollsters.

Some pollsters include their clients on their websites. For instance, TÜSİAR has mostly worked with AK Party and Saadet Partisi (Felicity Party, SP) (TÜSİAR). ANAR and Aksoy have conducted surveys for municipalities won by different parties (Aksoy; ANAR). Andy-AR states that they work with political parties but not their names (Andy-AR). Gezici reported that they have worked with AK Party, CHP, MHP, and SP in the past (Gezici). Politic's has worked for AK Party and MHP (Politic's Communication & Research). Lastly, TEAM has worked for CHP (Çapa 2019).

Media, journalist, and political parties make several claims regarding the relations between pollsters and political parties. Beşir Atalay, who is the founder of ANAR, is an AK Party member of the parliament and a former deputy prime minister. The previous general director of the firm, İbrahim Uslu, is the husband of Zeynep

Karahan Uslu, who is another AK Party Former Deputy. There is a claim that ANAR works for AK Party (Sözeri 2015; Wikipedia). The founder of GENAR, Tevfik Göksu, is the mayor of Esenler from AK Party and claimed to work for AK Party in the past (Düzce Yerel Haber 2015; Sözeri 2015). MAK's founder Mehmet Ali Kulat was an MP candidate from AK Party ranks in 2011 and is known as a pro-government pollster (Odatv 2015). Denge, PollMark, Konsensus, Andy-AR, Optimar, and ORC also claimed to work for AK Party (Kamudan 2015; Martin 2015). The founder of Konda, Tarhan Erdem, is allegedly against CHP (Net Haber 2015; Wikipedia). CHP has also blamed A&G for manipulating polls in favor of AK Party (T24 2017). Hakan Bayrakçı, the owner of SONAR, was an MP candidate from MHP in the 1999 Elections. However, he is claimed to have a pro-CHP approach (Kamudan 2015). Likewise, Gezici and AKAM are alleged to work for CHP (Düzce Yerel Haber 2015).

Put briefly, sponsorship of surveys is not the most transparent aspect of the polling practices in Turkey. Reporting the sponsors is uncommon. Although firms publish some political parties as their clients on their websites, they report to have conducted their polls using their own resources. Moreover, some founders of firms have political ties, which raises doubts about their impartiality. As such, allegations of political biases as evidenced above become inevitable. Since the sponsorship is a shady area of polling in Turkey, other methodology details become more critical.

2.2.4 Sample Size

In Turkey, polls report quite large sample sizes. The mean of all surveys is 4482 and the median is 3214. The largest sample size in our dataset is from a MAK poll for the June 2019 (Repeat) İstanbul Mayoral Elections, which had 33000 participants, whereas the smallest is 500 from Foresight for the 2018 Elections.

Figure 2.3 shows the distributions of the reported sample sizes of the examined surveys. 31.55% of the surveys have 4000 or more participants, 14.97% have between 3000 and 4000, 21.39% have between 2000 and 3000, and 9.36% have less than 2000 participants. 22.73% of the surveys provide no information regarding their sample sizes. As such, the share of our modal category –the surveys with 4000 or more participants– goes up to 40.83% when those with missing information are excluded.

Figure 2.3 Distribution of Sample Size

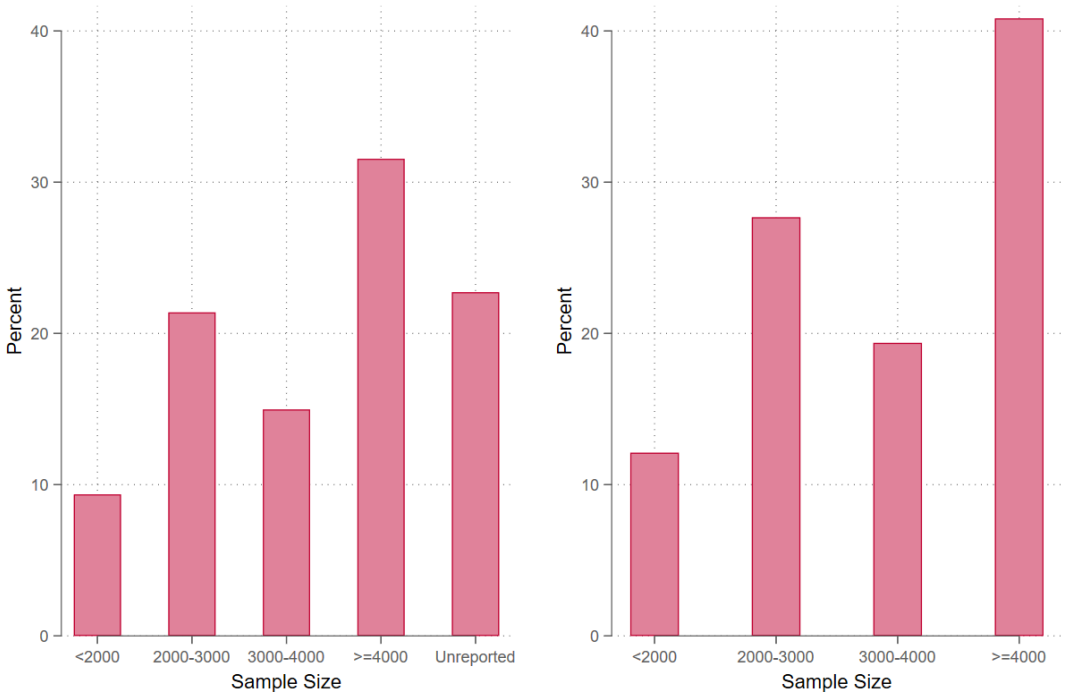


Table 2.4 shows the sample size categories for each election. The largest median sample size is for the 2014 İstanbul Mayoral Elections with 6966 participants, and the smallest median is 2700 for the 2018 General Elections. The highest missing information rate is 48% for the 2019 İstanbul and Ankara Mayoral Elections, while the highest reporting of sample sizes is for the November 2015 General Elections, where 92.68% of the polls reported their sample sizes. Moreover, 43.90% of the polls for this election have at least 4000 participants. We should also note that the polls with less than 2000 participants are the least frequent category, and its highest value is 20% for the 2019 Ankara Mayoral Elections.

Among the 118 polls reporting to have sample sizes of 4000 or more, ORC has reported 20 polls, Gezici and MAK have reported 15, GENAR has reported eight, and Ada, PollMark, REMRES, and TÜSİAR have together reported in six such polls. 56 polls report to have sample sizes that range between 3000 and 4000. SONAR has reported sample sizes between 3000 and 4000 in 11 polls, ORC in eight, Gezici in six, Andy-AR in four, and Argetus and Konda in three polls. For 80 polls that include participants between 2000 and 3000, Metropoll has reported 14 polls, Konda seven polls, all AKAM, Optimar, and Piar six polls, and both Andy-AR and Mediar four such polls. 35 polls have less than 2000 participants, eight of which are from Konsensus. AKAM, Metropoll, and Perspektif have each reported three polls from this category of lowest sample sizes.

Table 2.4 Sample Size in Each Election (%)

		Md.	<2000	<3000	<4000	≥4000	Missing	N
2011	General	2900	11.54	19.23	7.68	42.31	19.23	26
2014	Ankara	4550	0.00	10.53	21.05	31.58	36.84	19
	İstanbul	6966	0.00	13.04	4.35	34.78	47.83	23
	Presidential	3287	9.38	18.75	25.00	34.38	12.50	32
2015	General (June)	3543	7.35	19.12	22.06	38.24	13.24	68
	General (November)	3307	12.20	26.83	9.76	43.90	7.32	41
2018	General	2700	13.04	30.43	8.70	26.09	21.74	46
	Presidential	2888	9.52	35.71	14.29	28.57	11.90	42
2019	Ankara	3750	20.00	4.00	8.00	20.00	48.00	25
	İstanbul	3750	0.00	16.00	12.00	24.00	48.00	25
	İstanbul (Repeat)	3200	14.81	11.11	14.81	25.93	33.33	27

High Low

85 polls have not reported sample size: Gezici has not reported its sample sizes in 12 polls, Konda in eight polls, TEAM in seven polls, AKAM in six polls, and both MAK and SONAR in five polls. Aksoy, Andy-AR, Argetus, Betimar, EMAX, İKSara, İVEM, KamuAR, Konsensus, Perspektif, Politic's, PollMark, TÜSİAR, and Vera have always reported sample sizes, whereas PlusMayak and TEAM were the two pollsters who conducted at least two polls and who have never reported their samples sizes.

Non-reporting sample size is more extensive in mayoral elections in comparison to general and presidential elections. Pollsters usually report the sum of the participants if they conduct polls in multiple cities. Moreover, the average sample size is higher in polls for mayoral elections. The reason could be the easiness of conducting polls in one city rather than many cities.

2.2.5 Language

According to a Konda (2011) report, 84% of Turkish citizens' mother tongue is Turkish. Kurdish is the second widely spoken language with 13% of the population. However, speaking or writing in Kurdish was banned with the Law on Broadcasts in Languages Other than Turkish between 1983 and 1991 (TBMM 1983). Today, although Kurdish is a free language, the public's attitudes regarding the use of Kurdish varies to a large extent. Therefore, it is a sensitive issue and might prevent pollsters from conducting polls in Kurdish. Indeed, virtually no pollsters disclose

the surveys' language, all their research reports are in Turkish, whereas some provide English reports as well. Even pollsters who frequently conduct public opinion surveys on the so-called Kurdish issue and with the Kurdish population publish their reports in Turkish (Rawest; Siyasal ve Sosyal Araştırmalar Merkezi).

Although conducting surveys in multiple languages might lead to higher response rates and representation, this is a sensitive issue in Turkey. First, there are no official records of the Kurdish population. Therefore, if an interviewer randomly knocks on a door in many cities, she would not have an idea about the mother tongue of the household population. So, the interviewers must be able to speak both languages to be able to conduct their interviews in multiple languages.

This issue may perhaps be addressed with web surveys or CATI, but these practices are problematic with regard to their representativeness, since no sampling frame closely matching the target population exists. Second, citizens whose mother tongue is Kurdish might not prefer telling their mother tongue because of a fear of discrimination. Third, Kurdish people whose mother tongue is Turkish can report that as Kurdish because they may not want to seem alienated. That may also lead to problems about understanding the questions. Fourth, asking respondents about their mother tongue before the interview can affect participation rates. Some people might get offended by the question and refuse to participate. Furthermore, this question might increase measurement error –for instance, regarding individuals' attitudes about issues involving nationalist attitudes including but not limited to voting behavior.

2.2.6 Survey Questionnaires

Pollsters do not publish their wordings of and interviewer instructions/programming for all questions. At best, they report selected questions from the survey questionnaires. However, it is often impossible to know from those whether the exact wording and presentation of the questions and response options are accurate or not. Most commonly, pollsters report the question wording of their intended vote questions. The typical wording is "If the election were to be held today, for whom would you vote?" or "Who will you vote for in the upcoming election?" with minor differences in question-wording. For three polls conducted by Optimar, ORC, and İVEM, this question's wording however is somewhat unconventional, where the related questions were asked indirectly to estimate party vote shares. For instance, Optimar asked "[w]ould you vote for this candidate in the presidential election?" for each

candidate, and then have calculated the vote shares. However, the pollster does not report whether the respondents are allowed to report that they will vote for multiple candidates and, if so, how did this issue was handled.

Figure 2.4 shows the proportion of the available categories on reported survey questions. 36.36% of the polls include an intended vote question, 23.80% of the surveys include more questions in addition to intended vote question, and 39.84% of the surveys report no related information. The rate of reporting the intended vote question increases to 60.44% and that of multiple questions increases to 39.56% when surveys with missing information are excluded.

Figure 2.4 Distribution of Survey Questions

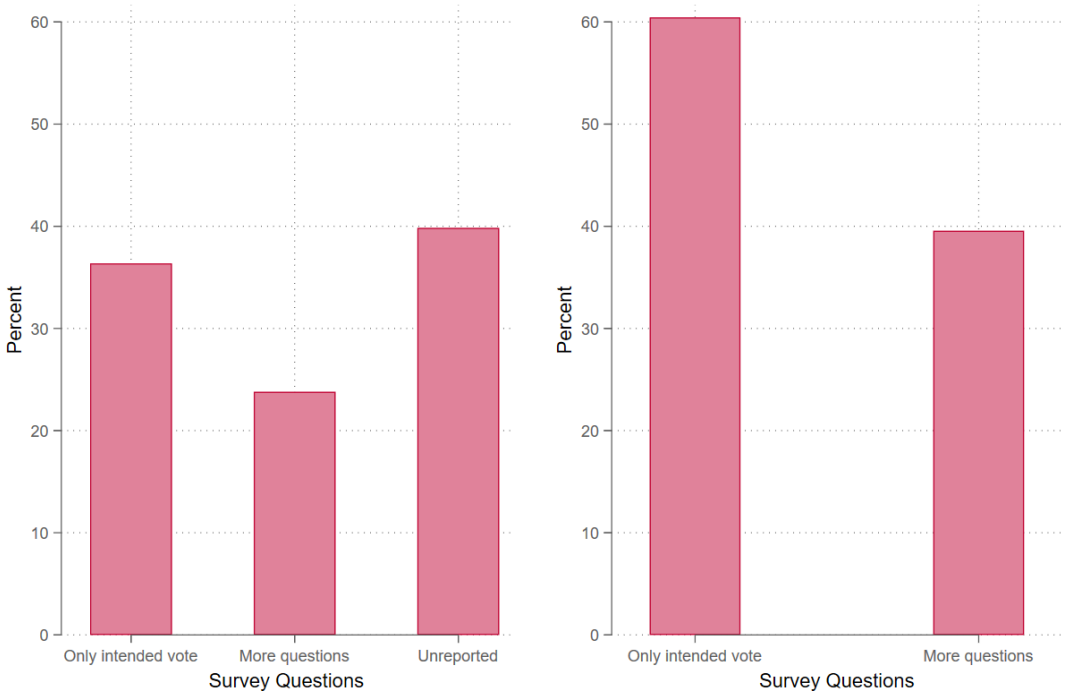


Table 2.5 demonstrates the rates of reporting survey questions for each election. Polls for the 2019 İstanbul Mayoral Elections have the lowest rate of reporting their survey questions with 44%. The highest reporting is from the June 2015 General Elections with 73.53%. Moreover, 47.06% of the polls for this election have reported multiple questions. The polls for the 2014 İstanbul Mayoral Elections have the highest share of reporting the intended vote question. However, interestingly, no pollsters reported multiple questions for this election.

MAK and Metropoll are the most transparent among the examined pollsters when it comes to reporting their survey questions. Both have reported the used questions in 10 polls. Gezici has reported the questions in eight surveys, ORC in six, both

Table 2.5 Survey Questions in Each Election (%)

		Intended vote	More questions	Missing	N
2011	General	30.77	30.77	38.46	26
2014	Ankara	47.37	0.00	52.63	19
	İstanbul	56.52	0.00	43.48	23
	Presidential	25.00	31.25	43.75	32
2015	General (June)	26.47	47.06	26.47	68
	General (November)	17.07	29.27	53.66	41
2018	General	54.35	17.39	28.26	46
	Presidential	52.38	19.05	28.57	42
2019	Ankara	40.00	8.00	52.00	25
	İstanbul	32.00	12.00	56.00	25
	İstanbul (Repeat)	25.93	25.93	48.15	27

KamuAR and Konsensus in five, and Argetus, GENAR, and SONAR in four surveys. These pollsters constitute 62.22% of the reporting related questions in a total of 90 polls, while 136 polls report the intended vote question(s). ORC has reported related questions in 20 polls, Gezici in 14, Optimar, REMRES, and SONAR in 10, both AKAM, and Metropoll in nine polls.

There are a total of 152 polls with missing information. GENAR has not reported the wording of its intended vote question or all used questions for estimated vote shares in 15 polls, Gezici and Konda in 14, A&G in 10, AKAM, MAK, ORC in nine, and TEAM in seven polls. In fact, these surveys account for 57.24% of the surveys with missing information. A&G, Foresight, and TEAM are the only firms among the pollsters who conducted at least two polls that have not shared any of their survey questions.

Reporting multiple questions from the survey is more common in general and presidential elections. Pollsters usually report attitudes about political and economic issues and the previous vote choices to make claims about the upcoming elections' determinants and voters' volatility among the political parties.

2.2.7 Survey Date

Pollsters conduct more surveys as the election date approaches. 21.96% of the surveys were conducted within the last 10 days of the election campaigns. 21.96% of

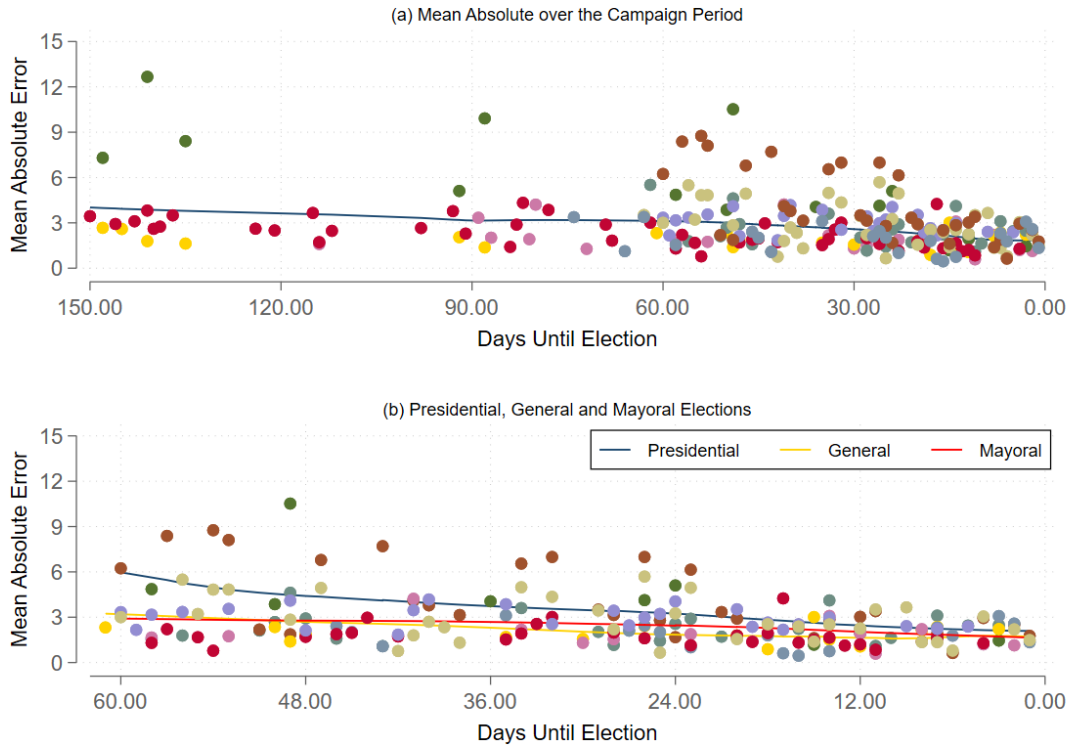
the surveys were conducted in the last 10 to 20 days of the campaign period, 13.23% of the surveys between the last 20 and 30 days, and 28.31% of the surveys between 30 and 60 days before the election day. 14.55% of the surveys were conducted more than two months before the election day.

The high number of polls closer to the election date is based on the assumption that the estimates become more accurate as the election day approaches. There is a positive correlation significant at 0.01 level between the absolute error and the days until the election (r=0.30, N=374).

Figures 2.5 plot the locally weighted scatterplot smoothing (LOWESS) curves for the mean absolute error across elections. Mean error for all parties and candidates is indicated with colorful circles, and the LOWESS curves is indicated with solid lines. As shown in Figure 2.5.a, the absolute error decreases as the election approaches in line with the theoretical expectations (Jennings and Wlezien 2016; Jennings and Wlezien 2018). The average absolute error of the polls conducted 60 to 150 days before the election date is 3.32. It decreases to 3.01 in the last 30 to 60 days. Within 20 to 30 days before the election day, it is 2.68 and it drops to 1.94 for the polls conducted in the last 20 days preceding the election day.

Figure 2.5.b plots the LOWESS curves over the election campaigns of the examined presidential, general, and mayoral elections. It starts from the last 62 days because the earliest available polls for presidential elections are conducted 62 days before the election day. The decrease in the mean absolute error is higher in the presidential elections as similar to other countries (Jennings and Wlezien 2018). The mean absolute error of the polls that were conducted more than 30 days before the election date in the presidential elections is 4.39, while it is 2.68 for the general and 2.56 for the mayoral elections. For polls conducted in the last 10 days of the election campaigns, on the other hand, the absolute error decreases to 2.24 for the two presidential elections, 1.95 for the general elections, and 1.75 for the mayoral elections.

Figure 2.5 Mean Absolute Errors over the Course of Election Campaigns



2.2.8 Sampling Method and Sampling Frame

Among the polls I examined, sampling procedures are more than often not documented. Figure 2.6 shows the proportion of sampling methods. The sampling method reporting rate is indeed 28.88%. In only 7.75% of all surveys, probabilistic methods were used and in 21.12% quota sampling was the preferred method. The probabilistic sampling rate is 26.85% and the quota sampling rate is 73.15% among polls without missing information.

Figure 2.6 Distribution of Sampling Methods

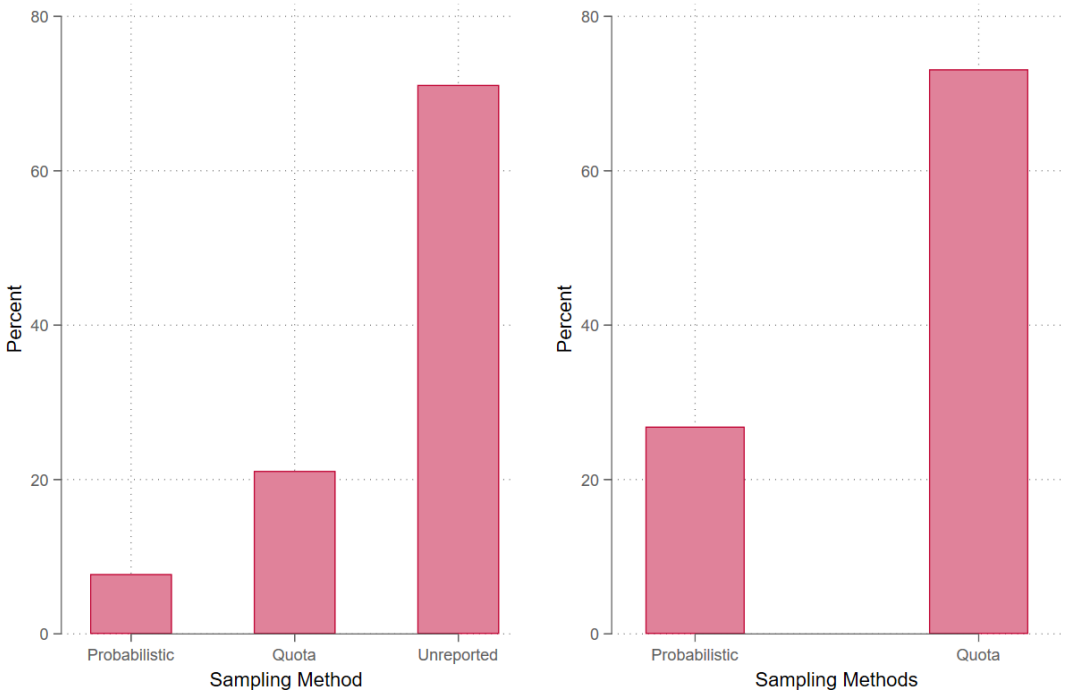


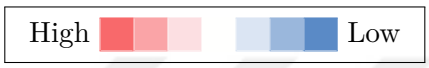
Table 2.6 shows the percentages of sampling methods for each election. The polls for the 2019 İstanbul Mayoral Elections have the lowest rate of reporting sampling method where only 8% of the polls did so. The highest reporting is from the November 2015 General Elections with 68.78%. Furthermore, the quota sampling rate is the highest for this election with 41.46%. The polls for the 2014 Presidential Elections have the highest reporting of probabilistic samples with 9.38%. Polls for the mayoral elections except for the June 2019 (Repeat) İstanbul Mayoral Elections have not reported any probabilistic sampling.

Only four pollsters carried out all 29 probabilistic polls. Metropoll has conducted 14 such polls, REMRES eight polls, Ada four polls and three polls were conducted by GENAR. There are 79 quota sampling polls. Konda has the highest frequency of quota sampling procedures with 12 polls. Gezici has conducted nine such polls, Andy-AR has seven, TÜSİAR has six, Piar has five, and each Aksoy, Mediar, ORC, and SONAR have reported four such polls. These pollsters constitute 69.62% of the 79 polls with quota sampling.

To the best of my knowledge, there is no sampling frame matching the voting eligible population that can be used for telephone or web surveys in Turkey. However, pollsters tend to misuse the term sampling frame. For instance, they report TÜİK as their 'sampling frames'. However, TÜİK provides no such frame that includes

Table 2.6 Sampling Methods in Each Election (%)

		Quota	Probabilistic	Missing	N
2011	General	19.23	7.69	73.08	26
2014	Ankara	21.05	0.00	78.95	19
	İstanbul	13.04	0.00	86.96	23
	Presidential	12.50	9.38	78.13	32
2015	General (June)	22.06	5.88	72.06	68
	General (November)	41.46	7.32	51.22	41
2018	General	21.74	4.35	73.91	46
	Presidential	26.19	4.76	69.05	42
2019	Ankara	20.00	0.00	80.00	25
	İstanbul	8.00	0.00	92.00	25
	İstanbul (Repeat)	18.52	3.70	77.78	27



the phone numbers of the individuals. TÜİK has been identified as the provider of the sampling frames in 31 polls using CATI or mixed method surveys (F2F and CATI). REMRES misuses the term in eight polls, Ada in six, and both Argetus and TÜSİAR four times. As a matter of fact, only MAK explains how the telephone numbers were supplied by mobile operators for the June 2019 (Repeat) İstanbul Mayoral Elections.

2.2.9 Quota Variables

As noted above, a total of 79 surveys report quota sampling as their sampling method. 77 of them provide the variables used for quota sampling. However, only a few pollsters clearly explain at what stage quotas were applied (i.e., either at the sampling or post-survey adjustment stages) and their sources for the quota variables. Konda reports to have applied gender and age quotas for household selection and after the sample was selected based on population and education levels from TÜİK data in 12 polls. TÜSİAR reports that gender, age, and education quotas were applied after the sample was selected and based on demographic variables provided by TÜİK in five polls. İVEM follows the same procedure for one poll. Gezici (for five) and A&G (for three polls) report to have used gender and age quotas after they draw their samples and based on demographic variables again provided by the TÜİK. Lastly, SONAR reports to apply gender, age, and district quotas after the sample selection stage and based on TÜİK data. In sum, only 33.33% of the quota

variables are reported in the polls with quota sampling. Other pollsters provide the variables used for quota sampling.

Table 2.7 shows the numbers of variables used in quota sampling. Gender was used in 87.65% of the examined surveys; age in 80.25%, education level in 33.33%, district size[5] 22.22%, and political party (based on party vote shares at the aggregate-level) in 18.52%.

Table 2.7 Quota Variables

Quota variables	N	Rate
Gender	71	87.65%
Age	65	80.25%
Education	27	33.33%
District	18	22.22%
Political party	15	18.52%
Demographic	2	2.47%
Income	2	2.47%
Unreported	4	4.94%

2.2.10 Target Population and Population Representation

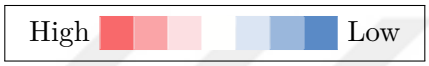
In Turkey, pollsters usually define the target population as a "voting-age population." However, this definition is inadequate because, as noted above, some groups of eligible voters are not reachable. Prison inmates, military personnel in active duty, and hospitalized citizens are such groups that should not be accessible for any pre-election polls. Therefore, a better definition of the target population could be "Non-institutionalized, civilian (military personnel excluded) Turkish voting-age citizens aged 18 years or older, living in Turkey".

Table 2.8 shows the number of polls and the proportion of non-reporting of the target population. Non-reporting is very common in 79.68% of all surveys and only 76 surveys define their target populations. Reporting is lower in mayoral elections. The lowest reporting is from 2011 General Elections and 2014 Ankara Mayoral Elections. 2018 Presidential Elections have the highest rate of reporting the target populations with 28.26%.

[5]Indeed, pollsters should use the term proportionate-to-size instead of district size.

Table 2.8 Reporting Target Populations in Examined Elections

		Target Population Reported	Missing	N
2011	General	1	96.15%	26
2014	Ankara	1	94.74%	19
	İstanbul	2	91.30%	23
	Presidential	6	81.25%	32
2015	General (June)	10	85.29%	68
	General (November)	10	75.61%	41
2018	General	13	71.74%	46
	Presidential	14	73.81%	42
2019	Ankara	7	72.00%	25
	İstanbul	6	76.00%	25
	İstanbul (Repeat)	6	77.78%	27



Among the examined pollsters, Gezici has the highest rate of reporting its target populations. It correctly defines the target population in 17 polls, Konda do so in nine, TÜSİAR in seven, Ada in six, both Konsensus and Argetus in five, Mediar in four, and each A&G, AREA, Piar and Vera in three polls. These pollsters constitute 88.16% of the polls reporting their target populations.

As discussed above, CATI and web surveys cannot claim representativeness due to the lack of suitable sampling frames in Turkey. Face-to-face surveys also do not automatically mean representative surveys because of non-random sampling practices frequently followed. However, several pollsters argue that their samples are representative of their target population even though they use quotas. Indeed, if the sampling method is not based on a random selection of households from TÜİK's ADNKS, representativeness cannot be achieved. However, ADNKS has some inconsistencies, too. Firstly, its records are up-to-date as of the end of the previous year. As such, it fails to account for any recent changes (e.g., those who moved out or died, new constructions, abandoned buildings). Secondly, members of some households are registered at different addresses rather than those they reside in. Thirdly, some households are not registered at the ADNKS at all –especially in rural areas. Fourthly, officers can make mistakes during recording. For instance, official records may include demolished buildings. Fifthly, several rural areas are not registered at the ADNKS records.

Moreover, achieving a good sampling frame could be more challenging for mayoral elections. First, as mentioned above, members of some households are registered at different addresses and not eligible to vote in the target city. Second, for general

or presidential elections, samples can be based on cluster sampling at the NUTS-2 level. However, this is not possible for mayoral elections. Some cities, including İstanbul and Ankara, are NUTS-2 region alone. Third, telephone or web surveys pose more threat to representativeness as it is not possible to know whether the participants are eligible to vote in the target city or not.

Unfortunately, pollsters do not disclose the details of their sources and solutions for the inconsistencies in their sampling frames. However, the sampling design should include this information. For instance, Çarkoğlu and Aytaç in the Comparative Study of Electoral Systems (CSES) Module 5 (2020) explain that they contacted the headmen of some villages to obtain lists of households for the remote regions where there exist no ADNKS records.

2.2.11 Proportion of Telephone Interviews/Online Surveys Completed on a Mobile Phone

63 of the 374 surveys use CATI and mixed modes (F2F and CATI). However, only three of report their mobile phone rates. MAK does so and reports that 40% of its sample is based on landline phones, and 60% are selected from the lists provided by three operators for the June 2019 (Repeat) İstanbul Mayoral Elections. Konsensus reports to have sampled 37% of landline users and 63% of mobile phone users for the 2018 General and Presidential Elections. On the other hand, four web surveys conducted by İstanbul Ekonomi provide no details about mobile browser rate.

2.2.12 Re-contacting Attempts

No pollsters have ever reported a callback rate among those that prefer CATI and mixed methods. In addition, face-to-face surveys have not provided any information about their procedures for when the designated households were not present or unavailable. Moreover, there is no information regarding their field hours, which may lead to biased samples undersampling the working population. However, it is crucially important to make multiple contact attempts, arrange appointments with participants, and disclose the necessary details about re-contacting attempts that could encourage more people to participate in a survey and decrease the inherent non-response error (Lavrakas 2008, 697).

2.2.13 Interview/Survey Verification

Pollsters in Turkey do not employ Interactive Voice Response or robocall surveys. Web surveys are also employed very rarely. As noted above, there are only four web surveys, all of which were conducted by İstanbul Ekonomi and the pollster has not reported whether it uses a security system to detect whether the respondents are real or not.

Interviewer involvement in this respect is a more important issue because most surveys are conducted face-to-face or using the CATI mode. However, interviewers' training, details of supervision, or interview/survey verification methods are not included in any pollster report. Three reports of Konsensus include the monitoring rate of interviews but do not include any information on the training process. Ada, Betimar, Gezici, and TÜSİAR indicate that all surveys are checked before the data analysis without any other information. Nonetheless, two pollsters include information about survey verification on their official websites. A&G notes the project manager and team leaders train their interviewers before the fielding of surveys. After then, 30% of the participants are checked by phone or through a second visit (A&G). Varyans indicates they have phone checks after the fielding (Varyans) and Konda notes they check all interviewers and their surveys in their job application forms (Konda).

2.2.14 Survey Error

The margin of error is a commonly misused term. If the confidence level and sampling error rate are specified, all individuals in the sampling frame should have a fixed and non-zero chance to be interviewed. In this case, randomness is only possible by taking an address-based sampling frame from the TÜİK. Even in this case, however, many parameters may increase the sampling error, such as not being at the address, refusing to participate, or not answering the vote choice question, errors because of the stratification or clustering. However, pollsters in Turkey tend to report a margin of error without any of those considerations. Although students of survey methodology emphasize the impossibility of calculating the margin of error in non-probabilistic samples, some pollsters do not take these suggestions into account (Erdoğan 2019; Esmer 2020; Milliyet 2015; Moral 2019). Pollsters do not disclose whether or not the reported margin of error accounts for design effects as well. In our dataset, Vera is the only pollster who has mentioned about the design effects,

but it has not reported the effect either.

Figure 2.7 shows the distribution of the margin of error across different survey modes. 64.64% of polls have not reported error rates. 12.83% have reported a margin of error, although they have not used random sampling; 17.11% reported a margin of error but have not disclosed any information about the sampling method. Only 6.42% of the polls report their margins of error correctly. If unreported errors are excluded, the incorrect reporting practice increases to 35.29% and 47.06% of the polls still have to be coded as missing because their method is unknown, only 17.65% of the surveys have correctly reported the margin of error among those providing such information.

Figure 2.7 Reported Margins of Error by Sampling Method

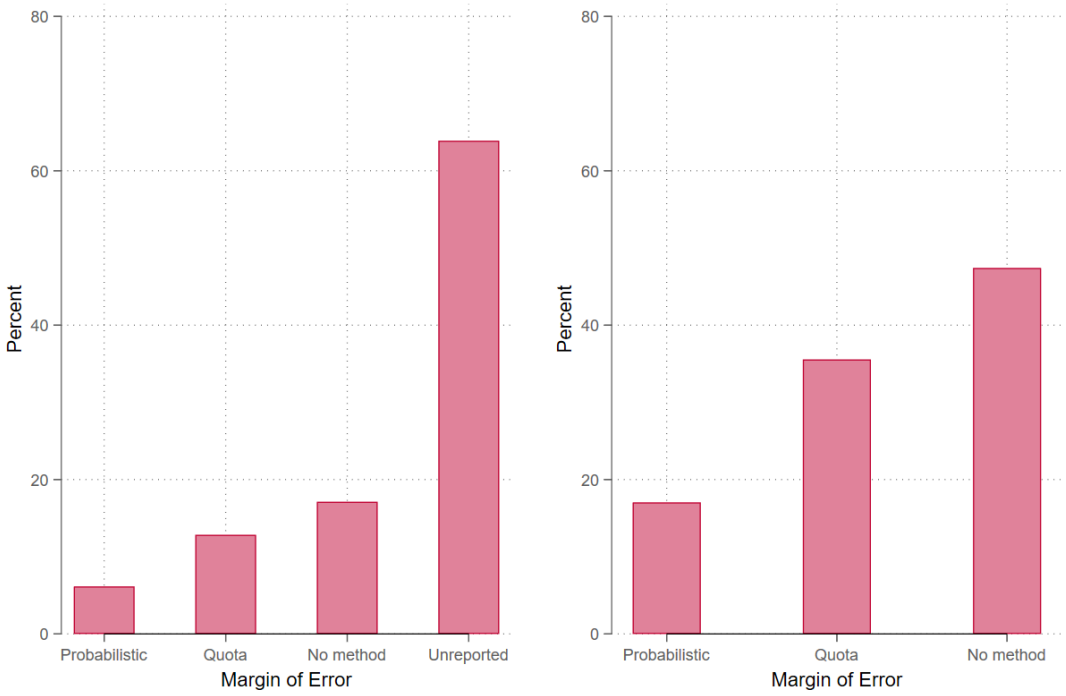


Table 2.9 shows the reported margins of error by the sampling method in each election. 2019 İstanbul Mayoral Elections show the lowest reporting rate with only 8%. 2018 Presidential Elections has the highest reporting rate with 54.76% of the polls doing so. Moreover, accurate reporting is also the highest for this election with 16.67%. The highest rate of inaccurate reporting is from the November 2015 General Elections with 24.39%. Reporting the margins of error with no information about the sampling methods, on the other hand, is at its highest for the 2018 General Elections.

A total of 17 pollsters have misused the term 'margin of error' in a total of 48

Table 2.9 Reported Margin of Errors by Sampling Method in Each Election (%)

		Quota	Probabilistic	No method	Missing	N
2011	General	15.38	0.00	7.69	76.92	26
2014	Ankara	5.26	0.00	5.26	89.47	19
	İstanbul	4.35	0.00	8.70	86.96	23
	Presidential	9.38	6.25	15.63	68.75	32
2015	General (June)	11.76	5.88	22.06	60.29	68
	General (November)	24.39	7.32	14.63	53.66	41
2018	General	15.22	15.22	23.91	45.65	46
	Presidential	16.67	16.67	21.43	45.24	42
2019	Ankara	8.00	0.00	12.00	80.00	25
	İstanbul	4.00	4.00	0.00	92.00	25
	İstanbul (Repeat)	14.81	3.70	18.52	62.96	27

High Low

polls. Six polls of each Andy-AR and TÜSİAR were reported inaccurately. Konda misuses the term in five polls, Aksoy and Mediar in four, each A&G, Gezici, MAK, and SONAR in three, AKAM, Metropoll, REMRES in two polls, and Ada, Argetus, GENAR, İVEM, and Perspektif in one poll. Interestingly, all but four of these firms have more than 10 years of experience in public opinion polling.

Margin of error has been reported correctly in 24 polls. Metropoll has correctly reported it in 14 polls, REMRES in eight, and Ada in three polls. Lastly, 64 polls report margins of error without any information about the sampling methods. Gezici has reported it in nine polls, Konsensus in eight, both AKAM and MAK in five polls, and Mediar and Piar in four polls have not reported their sampling method but margins of error.

More strikingly, 238 polls have no information regarding their margins of error. ORC has not reported a margin of error in 34 polls, Gezici in 24, GENAR and SONAR in 15, MAK in 13, both AKAM and Konda in 11, Optimar in 10, PollMark, and TEAM in seven, and both A&G, and Metropoll in six polls.

2.2.15 Weighting

In examined polls, only four pollsters have reported to have weighted their poll data. In four polls, Ada, in eight polls Metropol, and in 10 polls REMRES report to have used weighting but provide no further explanations. In two polls, Ada has reported

that they weighted their data using some demographic variables coded from TÜİK data. Konda reports to use weighting based on education level and district size and according to TÜİK statistics in a total of 10 polls. Therefore, Konda is the only firm that reported its weighting variables and their sources correctly. However, unweighted frequencies or percentages have not been reported by any pollster.

In contrast to these poor practices, cross-national studies such as CSES, International Social Survey Programme (ISSP), and World Values Survey (WVS) conducted by academics are very transparent about their post-survey adjustments and weighting practices. For instance, Çarkoğlu and Aytaç (2020) have reported very detailed information regarding the weighting of the survey data collected for CSES Module 5. They explain that gender, age groups, and education level are weighted according to TÜİK's national statistics. Moreover, geographic weights (given the sampling proportionate to sizes of the NUTS-2 regions) are calculated and a total weight as a product of the two sorts of weights is provided. Lastly, the design report includes weighted and unweighted distributions of variables.

2.2.16 Minimum Subset Size

Turkey is an ethnically, religiously, and politically diverse country. According to Konda's (2018) report, 16% of Turkish citizens define themselves as Kurdish. Approximately 73% of citizens are Sunni, 13% of them are Shafii, 5% of them are Alevi. In addition to ethnic and religious differences, there are several political parties with varying vote shares except for the major, legislative parties (AK Party, CHP, MHP, IYI, Halkların Demokratik Partisi [Peoples' Democratic Party, HDP]). Therefore, pre-election polls are often affected by the smaller sizes of these sub-groups in predicting party or candidate vote shares. The margin of error for those groups is much higher because of their smaller sizes. For instance, a sample size of would 50 result in a 13.86% margin of error at 95% confidence level in Turkey. Therefore, making inferences is too hard, if not impossible in many cases, with such a high uncertainty. Unfortunately, pollsters do not report their minimum sample sizes for different ethnic, religious, and political sub-groups in any of the surveys I examined.

2.3 Employed Grading Scale Based on the CNN's Transparency Index

I employ a revised version of the CNN's Transparency Index to assess the quality of pollsters' reporting. Although CNN's Index very well covers potential problems from the perspective of the Total Survey Error paradigm, I had to make some adjustments in grading to make it more applicable to the polling practices in Turkey that differ from those in the US. The details of scoring criteria on the revised CNN's Transparency Index are presented in Appendix A.2.

2.3.1 Grading Items

1. Survey Firm

Pollsters with experience in the polling industry for more than 10 years get 1 point, otherwise 0. If pollsters are members of TÜAD or ESOMAR, they get 1 point, otherwise 0. Pollsters' past performance is calculated by averaging their polling errors (i.e., average absolute errors) for the elections where they have reported (excluding the pollsters that exist in only a single election cycle) at least one poll. If a pollster is among the top 20, it gets 1 point, otherwise 0.

2. Survey Mode

Face-to-face surveys conducted in respondents' households receive 3 points. Face-to-face surveys that do not indicate how their interviews were conducted receive 2 points. If the information on survey mode is missing, the pollster receives 1 point. CATI, mixed-surveys, and web surveys receive 0.

3. Sponsor

Polls conducted using pollsters' own financial resources receive 3 points. If polls are conducted with external non-partisan sources (NGOs, newspapers), pollsters get 2 points. If the sponsor is not reported, pollsters get 1 point. Polls conducted for political groups or parties receive 0.

4. Sample Size

Given the size of the voting eligible population in Turkey, sample sizes of about 2400 respondents result in a 2% margin of error at 95% confidence level. Therefore, if there are 2400 or more respondents, pollsters earn 3 points. Sample sizes between

1500 and 2400 result in a margin of error between 2% and 2.5%, and pollsters receive 2 points when they report a sample size between 1500 and 2400. If pollsters stated a sample size between 1000 and 1500, they get 1 point. Moreover, if pollsters are ambiguous about their sample size (e.g., between 2400 and 3000), or the sample size is missing, they get 1 point. If the sample size is smaller than 1000, pollsters get 0.

5. Language

As noted above, no pollsters report the language of the survey for any of the examined polls. Therefore, they all receive 1 point.

6. Survey Questions

If pollsters report more questions than the vote intention question, they receive 3 points. If only that question is available, pollsters receive 2 points. If question-wording is missing, pollsters receive 1 point. If pollsters report unusual wording (e.g., will you vote for party/candidate X?), they get 0.

7. Survey Date

If the field date is specified, pollsters receive 3 points. If the field date is specified without sufficient detail (e.g., last week of May) pollsters score 2 on this item. If only the field month is reported (e.g., in May), pollsters get 1 point. If the field dates are missing altogether, pollsters get 0.

8. Sampling Method and Sampling Frame

Probabilistic samples with reported sampling frames receive 3 points. In the case of probabilistic samples without any information on sampling frames, pollsters receive 2 points. If the sampling method is missing and but the sampling frame is reported, pollsters receive 1 point. Non-probabilistic samples, and missing information on both the sampling method and frame receive 0.

9. Quota Variables

Probabilistic samples receive 3 points. Pollsters that use quotas for household selection and that report their sources for the reported variables, after selecting addresses randomly, get 2 points. If the sampling method is unreported,

pollsters get 1 point. Quota sampling without any other details leads to a score of 0.

10. Target Population and Population Representation

Face-to-face samples based on TÜİK data with a defined target population are given 3 points. If the target population is missing, pollsters get 2 points. If the target population is defined, but the sampling source is missing, pollsters receive 1 point. If all that information is missing, they receive 0.

Surveys with missing survey mode but reporting that their samples are based on TÜİK data without a clearly defined target population get 2 points. If the target population is missing, they get 1 point. If the target population is defined, but the sample source is missing, they get 0.

Since achieving representativeness of the target population is not possible with phone and web surveys in Turkey, all surveys with those two modes get 1 point if they clearly define their target populations, 0 otherwise.

11. Cellphone/Mobile Browser Rate

If pollsters report the percentage of telephone numbers from multiple operators and landline phones, they get 3 points. If they report the percentage of cellphone rate and landline without providing other necessary details, they receive 2 points. If pollsters report only the percentage of cellphone and landline phones, they get 1 point. If all that information is missing, they receive 0.

12. Callbacks

As noted above, no pollsters report the number of callback attempts in telephone surveys. Likewise, those conducting face-to-face surveys do not report the number of re-contacting attempts either. Therefore, they all get 1 point from this item.

13. Interview/Survey Verification

No Turkish pollsters report sufficient details about their interview/survey verification tools. Therefore, they all receive 1 point from this item.

14. Survey Error

If pollsters report to have used probabilistic sampling and their margin of error

is smaller than 2 percentage points or less, they receive 3 points. If they use probabilistic sampling and report margins of error greater than 2, they receive 2 points. If they report a margin error but no sampling method, they receive 1 point. Pollsters who misuse the term 'margin of error' score 0 on this item.

15. Weighting

If weighting variables, including education, are indicated with proper sources, pollsters get 3 points. If weighting variables are not clearly identified (e.g., "demographic variables are used for weighting") but data sources are reported, the pollster receives 2 points. If pollsters indicated weighting without sufficient explanation, they receive 1 point. Others receive 0.

It should be noted that the question of how to deal with undecided voters is a major and common problem in election polls. The decision of how to handle the undecided depends on the timing and the mode of data collection, and can have a major effect on the final outcome (Fenwick et al. 1982). One of the most common practices used in allocating undecided voters is distributing them as proportionally to the parties or candidates' vote shares among the decided (Lavrakas 2008, 908). However, those commonly employed techniques of treating undecided voters are controversial and there is not a methodologically superior one (Bon, Ballard, and Baffour 2017). For instance, the timing of polls is a very important factor for understanding when voters make their decisions. That is because undecided voters or late deciders are usually considered politically less sophisticated (Schmitt-Beck 2009) and more likely to vote for the incumbent (Catellani and Alberici 2012). Hence, allocating the undecided respondents proportionally five months or one week before the election date would have very different implications for the accuracy of a survey. Since the treatment of undecided voters has a significant effect on data quality (Hillygus 2011), pollsters should also report the unadjusted vote shares of the parties or candidates.

16. Minimum Subset Size

As no pollsters report their minimum subset sample sizes, they all score 1 on this item.

2.4 Best Practices in Turkey

Based on the above explained rules and the revised CNN index I employ, the theoretical maximum score is 37 for an experienced and reputable pollster, who adopts the so gold-standards of survey methodology. In Turkey, face-to-face interviews with an adequate number of respondents in probabilistically selected samples of households based on TÜİK data is currently the best practice. Moreover, as discussed above, pollsters need to inform the public about their methods and procedures. A poll respecting these procedures and practices should thus score 37.

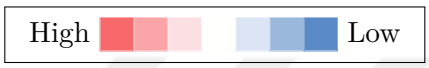
To assess the reliability of the grading scale, I graded a recent ISPP study (Çarkoğlu and Kalaycıoğlu 2020) in Turkey which scores 34. It loses three points for two reasons. First, Infakto and Birim, the survey firms that were responsible for the fielding of the survey, have no published election estimates. Therefore, their average absolute errors were not available. Second, the sample size was below 2400 and the margin of error was thus larger than 2. Because most of the pollsters in our dataset, unlike Infakto and Birim, publish polling estimates for multiple elections, the first issue does not pose a threat. Moreover, the sample size of the polls is usually higher than what is expected from a scientific survey with significantly higher costs. To reiterate, the average sample size of the polls examined in this study is 4482. In addition to an ISPP study, I also graded a poll from Marist Poll (2020), categorized as an A+ pollster by Nate Silver (FiveThirtyEight 2020). It loses six points for three reasons. First, the poll was conducted through phone interviews. Although there is no sampling frame for telephone surveys in Turkey, they can ensure representativeness in the US. Second, the poll was conducted with the financial support of an external non-partisan source. Third, the margin of error is larger than 2. The Marist Poll also reports a minimum subset size, unweighted distributions, and cross-tabulation of variables in contrast to the non-reporting of those in Turkey.

The average poll grade among all the examined polls is 14.03. Table 2.10 shows the average poll grades in each election. The highest average is from the polls conducted for November 2015 General Elections with 15.61 points over 37. The lowest average is from the 2019 Ankara Mayoral Elections with 11.24. Indeed, average is 12.36 for mayoral elections. As discussed before, pollsters often disclose less information for mayoral elections. The grades of pollsters are presented in Appendix A.3.

The highest grade in our dataset is from Metropoll for nine polls, which have 29 points, whereas the lowest grade is 5 for three polls from MAK and PlusMayak (two). Metropoll has the highest average with 22.73 that range between 9 and 29 in 22 polls. Konda has 19.28 points that range between 8 and 23 among 18 polls. Vera is the third successful pollster with 18 points. However, it has only reported three polls. TÜSİAR is fourth with 17.57 in seven polls, AREA is fifth with 17.33

Table 2.10 Average Poll Grades in Each Election

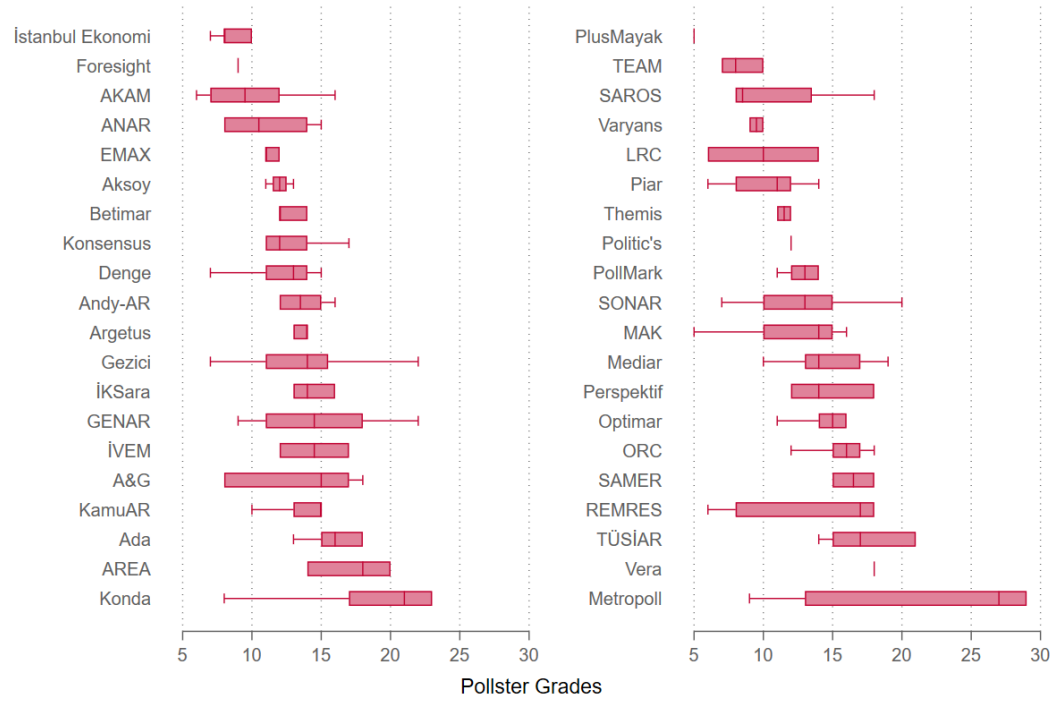
		Grade	N
2011	General	13.46	26
2014	Ankara	12.16	19
	İstanbul	12.30	23
	Presidential	15.00	32
2015	General (June)	15.28	68
	General (November)	15.61	41
2018	General	14.07	46
	Presidential	14.76	42
2019	Ankara	11.24	25
	İstanbul	11.88	25
	İstanbul (Repeat)	14.04	27



in three polls, Ada is sixth with nine polls, SAMER is seventh with 16.50 in two polls, ORC is eighth with 15.44, GENAR and Mediar are ninth with 14.89.

Figure 2.8 shows the average pollster grades among the pollsters who have conducted at least two polls. This table is quite revealing in several ways. First, four pollsters had no variance among their polls because they conducted less than four polls. Also, they systematically publish their reports, so their scores are the same for different polls. Second, the variance in the highest-graded pollsters is high. High variance indicates that pollsters' reporting practices are not standardized even they have years of experience in the public opinion polling. Third, although experience is not an indicator of transparency, the newer pollsters usually have lower scores.

Figure 2.8 Average Pollster Grades



3. METHODS AND FINDINGS

The purpose of this chapter is first to introduce the research methodology for pooling the polls together, then to analyze how pre-election polls can be used to forecast election outcomes. I then discuss the findings from the polls of polls for a total of 11 elections between 2011 and 2019 in Turkey. In the following sections, I first explain data collection procedures and present an overview of the original dataset I compiled. Then, I provide a detailed account of the research methodology and explain the measurement of the variables of interests. Finally, I present the empirical analyses and findings.

3.1 Dataset

The dataset I collected for and use in this thesis covers 374 pre-election polls conducted by 52 survey firms following the official announcements of the elections between 2011 and 2019. It covers the 2011 General Elections, 2014 İstanbul Mayoral Elections, 2014 Ankara Mayoral Elections, 2014 Presidential Elections, June 2015 General Elections, November 2015 General Elections, 2018 General Elections, 2018 Presidential Elections, 2019 İstanbul Mayoral Elections, 2019 Ankara Mayoral Elections, and June 2019 (Repeat) İstanbul Mayoral Elections.

Table 3.1 presents the number of polls for each election. There are 181 polls for the four general elections, 74 polls for the two presidential elections, 119 for the five mayoral elections examined in this study. The highest number of polls is 68 for the 2015 June General Elections and the lowest is 19 for the 2014 Ankara Mayoral Elections. The 2015 June General Elections is the earliest announced general election, which could explain the high number of polls. Although the date of the 2014 mayoral elections was announced four months before the election date, the firms which usually conduct and report multiple polls in elections such as AKAM, Konda,

and Metropoll had not shared their polling estimates. Instead, they had provided only nationwide results, which is likely the reason for the lower number of polls. Similarly, many experienced pollsters have not shared their polling estimates for the March 2019 Mayoral Elections. One of the pollsters noted that

> "[p]arties will be elected in the form of formal and informal alliances for mayoral elections. In some places, elections will be held with joint candidates and lists for both the provincial and local councils, with a formal alliance between the two parties. In some places, elections will be held with no such alliances, with the common mayoral candidates but different lists for local councils. In some places, there is no alliance. Moreover, in some places, HDP has not nominated candidates. In some places, there are candidates from Demokratik Sol Parti(Democratic Left Party, DSP) who have not announced its support for any of the two alliances in any research so far, but those may affect election results. Because of the differences in competitiveness, we will not calculate the vote shares or talk about the likely outcomes" (Konda 2019*b*).

In fact, other pollsters might have had a similar perception about the challenges for predicting the 2019 mayoral elections.

Table 3.1 The Number of Polls and Pollsters by Elections

Election - Announcement	**Election Type**	**Polls**	**Pollsters**
12/06/2011 - 04/03/2011	General Elections	26	13
30/03/2014 - 28/11/2013	İstanbul Mayoral Elections	23	12
30/03/2014 - 28/11/2014	Ankara Mayoral Elections	19	10
10/08/2014 - 04/06/2014	Presidential Election	32	19
07/06/2015 - 05/01/2015	General Elections	68	26
01/11/2015 - 24/08/2015	General Elections	41	24
24/06/2018 - 20/04/2018	General Elections	46	24
24/06/2018 - 20/04/2019	Presidential Election	42	23
31/03/2019 - 23/10/2018	İstanbul Mayoral Elections	25	15
31/03/2019 - 23/10/2018	Ankara Mayoral Elections	25	16
23/06/2019 - 06/06/2019	İstanbul Mayoral Elections	27	19

There are no publicly available datasets on election polls in Turkey. Therefore, for data compilation, I relied on a comprehensive list of online newspapers, pollsters' official websites and Twitter accounts, and web archives for the deleted or out-of-date content. First, I collected all pre-election polls published on Wikipedia. Wikipedia has published several opinion-polls except for the 2014 Mayoral Elections and 2014

Presidential Elections. Second, I consulted Google and used different time ranges for each election. I used the official election announcement date as the starting date and 15 days after the election as the end date. I did not use the election date as the end date for my search to be able to include the news stories regarding how pollsters performed in the election. Moreover, I repeated the search multiple times by changing the starting date because the number of polls tends to increase as the election date gets closer. Third, I checked pollsters' websites and Twitter accounts for official reports. Fourth, I searched the web archives (Internet Archieve) for deleted content from pollsters' websites. The web archives prove to be very helpful because some pollsters, especially those with inaccurate estimates, tend to remove their reports after the election. Fifth, I checked the Twitter accounts of the owners or managers of the polling firms since some advertise about their estimates via their personal accounts. Sixth, I searched some websites that usually include polling estimates in election campaigns (Radar Politika; Seçim Anketi; Seçim Haritası). Seventh, I obtained the official election outcomes from the Yüksek Seçim Kurulu's (Supreme Electoral Council, YSK) website. For the general and presidential elections, I only used the domestic election outcomes to ensure a better matching of the sampling frames and target populations for the pre-election polls. Lastly, after I located a poll, I searched for other websites for obtaining multiple resources and making sure that there were no inconsistencies.

It should be noted here that according to article 55/B of the Law on Basic Provisions on Elections and Voter Registers (Mevzuat 2010), broadcasting or reporting pre-election polls are forbidden through written, verbal, visual press, and media within the last ten days of the campaign period. However, the Law does not mention the publication of polls on the Internet, even though other articles regarding electioneering online, do so. Therefore, this ban does not affect my data compilation since many of the examined polls published in the last days of the election campaigns were published on the Internet.

The inclusion criteria for election polls are that they should be published after the official announcement of the election, that they should share major parties' or candidates' vote shares, and that the polling estimates should be available in multiple resources and consistent with each other. In the case that pollsters report the field dates, I coded the mid-day of the field research as the poll date. If the expression of date was vague such as "in May" I coded those as mid-month (e.g., May 15). If the wording is even more ambiguous and I was confident about that it was carried out following the official announcement, I coded the date using the publication date of the survey.

Moreover, sometimes pollsters may object the estimates covered in the news stories and that use their names. Such polls are omitted from the sample. I also did not include polls conducted by nonprofessional individuals. For instance, some individuals or websites conduct online polls for entertainment or curiosity without adopting or claiming any scientific and professional practices. Furthermore, politicians refer to some polls during their election campaigns. If the firm information was not available and there was no source to cross-check whether the poll was actually conducted, those polls were also excluded. Likewise, I excluded the polls asking for intended support for hypothetical candidates. An example would be "Whom would you vote for in the İstanbul Mayoral Elections, Binali Yıldırım or Mansur Yavaş?" Lastly, the data are limited to İstanbul and Ankara for the mayoral elections because of the relatively lower numbers of polls conducted for the mayoral elections in other cities.

I included all the necessary information discussed in the revised CNN Index: The pollster, sponsor of the survey, sample size, date, data collection method and mode, target population and sampling frame, weighting variables and their sources, proportion of telephone interviews completed on a mobile phone, margin of error, availability of survey questions, and use of quotas and their respective sources. I manually coded those data again by searching for news, research reports, pollsters' websites, and Twitter accounts. In comparison to the news websites that typically publish very limited information about surveys, mostly their sample sizes and field dates, a research report provides the most detailed information. Unfortunately, most pollsters do not publicly report their methodology. Furthermore, some pollsters publish their results with undecided, blank, or invalid votes already allocated. Since other pollsters generally allocate those to the parties as proportionally to the parties vote shares among those who report their intended vote choices, for comparison purposes, I allocated those votes to the parties and candidates proportionally as well.[1]

Table 3.2 shows the rate of answered questions out of the 16 questions examined here. The figures do not include if the item is fully and correctly reported. For instance, if the target population is mentioned but the sampling frame is missing, the variable is coded as unreported. Moreover, some questions do not apply to all observations if the questions are specific to a sampling mode, e.g., mobile phone rate is only valid for CATI or some mixed-mode surveys, or quota variables should be assessed only if quota sampling was employed.

As Table 3.2 demonstrates, pollsters do not disclose sufficient information regarding

[1]There are several techniques used to to treat undecided voters. All are, however, highly controversial (Bon, Ballard, and Baffour 2017). For instance, the timing of polls is very critical to understand political tendencies of undecided voters. Late deciders are more likely to vote for incumbent parties (Catellani and Alberici 2012). Therefore, the proportional allocation of undecided voters is not a good practice, but this is out of the scope of this study.

how their polls were conducted. The mostly reported survey methodology decisions are poll date, sample size, and survey mode. 77.27% of the polls have reported the field dates, 75.13% of them have reported their sample sizes, and 67.65% of polls have reported their survey modes. Other questions contain missing information for more than 50% of the examined polls. The least disclosed types of information are regarding the weighting variables (3.21%), proportion of mobile phones in telephone surveys (4.76%), survey error (6.42%) target population and population representation (9.36%), and sampling method and sampling frame (13.10%).

Methodological details are reported correctly in only 32.80% of the polls. The most successful pre-election surveys in terms of disclosing related information are from the November 2015 Elections. Pollsters have reported 43.09% of the necessary information correctly. Moreover, reporting practices are better when there are more pre-election polls as in the 2015 and 2018 elections. The least successful reporting practices are from the 2019 İstanbul Mayoral Election. Pollsters have reported only 17.09% of the required information. Indeed, pollsters perform much worse in mayoral elections. The average rate of answering all questions in mayoral elections is only 23%. One of the most important reasons for pollsters' poorer transparency in the mayoral elections is that they tend to report overall information if they conduct polls in multiple cities. For example, if they conduct polls in Ankara, İstanbul, and Mersin, they tend to share the sum of the participants in those cities and report a margin of error for the pooled sample. However, the margin of error should be calculated separately for each city. Otherwise; it is erroneous, if not misleading. In other words, this may impede the public from evaluating the polls. Moreover, those polls might be using different modes or sampling procedures for each city.

Table 3.2 Rate of Correctly Reported Items (%)

	2011	2014			2015		2018		2019		
Items	Gen.	Mayoral		Pres.	Gen.		Gen.	Pres.	Mayoral		
		İst.	Ank.		Jun.	Nov.			İst.	Ank.	İst.(Jun.)
Sponsor	57.69	21.74	36.84	37.50	48.78	44.12	23.91	26.19	20.00	12.00	37.04
Mode	73.08	56.52	63.16	71.88	66.85	77.94	69.57	66.67	52.00	56.00	59.26
Sample size	65.38	52.17	63.16	90.63	92.68	86.76	78.26	85.71	44.00	48.00	66.67
Questions	30.77	0.00	0.00	31.25	29.27	47.06	17.39	11.90	12.00	12.00	29.63
Date	61.54	73.91	73.68	71.88	92.68	77.94	78.26	83.33	48.00	72.00	85.19
Sampling method	0.00	0.00	0.00	17.65	41.46	17.39	30.43	33.33	4.00	8.00	14.81
Quota	0.00	0.00	0.00	75.00	70.59	60.00	80.00	77.78	0.00	20.00	60.00
Population & Frame	0.00	0.00	0.00	12.50	14.63	10.29	13.04	16.67	8.00	8.00	11.10
Cellphone rate	0.00	0.00	0.00	0.00	0.00	0.00	10.00	11.11	0.00	0.00	25.00
Survey error	0.00	0.00	0.00	6.25	7.32	5.88	15.22	16.67	0.00	0.00	3.70
Weighting	0.00	0.00	0.00	0.00	9.76	2.94	4.35	4.76	0.00	0.00	7.41
Average	26.22	18.58	21.53	37.69	43.09	39.12	38.22	39.47	17.09	21.45	36.35

3.2 Methods

The technological advancements following the emergence of the Internet has paved the way for poll aggregation (Jackson 2015). Combining polls have several advantages. First, pooling polls together gives more precise estimates for election outcomes. As the sample size increases, the margin of error decreases (Hillygus 2011). Second, errors in varying directions in multiple surveys tend to cancel each other out in an aggregate estimate. However, if the errors are in the same direction, error or bias does not disappear, especially if aggregators do not use proper weighting tools in their post-survey adjustments.

On the other hand, although a poll of polls is a good forecasting tool, compiling different surveys with insufficient information has its own limitations. Pollsters usually do not share their raw or processed data but rather some descriptive statistics such as the proportion of gender or vote intention. Therefore, while pollsters deal with individual-level data, poll aggregators have to deal with poll-level data. When the unit of analysis is polls, there are limited statistical analysis tools at researchers' disposal. One of the ways to analyze aggregated data is by taking the average of the polls. However, simple absolute errors do not take account of differences between polls. Therefore, doing so might not provide us with a precise estimate. Another method commonly employed in polls of polls is the LOESS (locally weighted scatterplot) smoothing. The estimates are made based on the weighted value of the nearest data point. Therefore, as the number of nearest points (i.e., over time) increases, the uncertainty of the model decreases. Another alternative is Bayesian models that depend on prior information such as economic indicators, approval ratings, and multiple simulations (Jackson 2015).

In Turkey, few studies to date have analyzed pre-election polls to the best of my knowledge. The first one focuses on the absolute errors of four pollsters for the November 1987 General Elections (Küçükkurt, Bir, and Yeles 1988). The second study analyzes the content of the news on polls between 1983 to 2002 in three newspapers with the highest daily circulations (Atabek 2003). The third study examines the poll performance of five pollsters for the 2004 mayoral elections and discusses the potential sources of errors (Balcı and Ayhan 2004). The fourth study focuses on the March 2014 Turkish mayoral elections (Görmüş 2016). It takes the average error of 10 polls at the country-level, eight polls for both İstanbul and Ankara, seven polls for İzmir Mayoral Elections, and three polls for each metropolitan city. The fifth study examines 63 polls for the June 2015 General Elections and 60 polls for

the November 2015 General Elections (Taymaz 2015). Similarly, the study takes account of the absolute error. The sixth study focuses on 23 polls for the 2017 Referendum (Güz, Kocabaş, and Yanık 2018). The study criticizes the coverage of polls in the media and shows the absolute errors of examined polls. The seventh study discusses the potential impact of polls for the 2017 Referendum on voting behavior (Şenyuva 2017). The eighth study examines the absolute error of 18 pollsters that conducted polls between 2010 and 2018 (Göksu 2018). The ninth study examines the absolute error of the eight polls for the November 2015 General Elections, 13 polls for the 2017 Referendum, and eight polls for both 2018 General and Presidential Elections (Stratejik Düşünce ve Analiz Merkezi (SDAM) 2018). The tenth study is from Çarkoğlu and Yıldırım (2018). They take the monthly averages of the polls for the 2018 General and Presidential Elections. They analyze 22 polls for the presidential elections and 34 polls for the general elections. However, these studies often employ unreliable data with significant inconsistencies between their and polling estimates. The last study uses the nearest neighbor estimates weighted by sample size for the polls of polls for the 2018 General and Presidential Elections (Moral, Forthcoming). Moral analyzes 40 polls for both elections, and in contrast to previous studies, the data he employs are reliable and the estimates are reproducible. Following the same approach, I employ the nearest neighbor estimation method, a type of kernel density estimation. Kernel density estimation does not assume the distribution of the data but instead calculates a density for every data point within a distribution and gives more weight to the nearest data points (Bilogur 2017). As such, nearest neighbor smoothing smooths the curve (i.e., trend) through time. A least-squared fit is used to such end –i.e., for calculating the smoothed values given the neighboring data points. It is similar to LOESS, but instead of calculating fitted values for each observation, it calculates the whole vector of fitted values. Moreover, this model allows for using additional analytical weights independent of the weights of the nearest neighbors (Sasieni 1995; Sasieni and Royston 1998).

The regression model formula as follows:

$$y_i = g(X_i) + \varepsilon_{\mathrm{i}} \tag{3.1}$$

The average value of y_i is determined as a function of the data points on x with k

nearest neighbors, whereas *g(x)* is estimated as follows:

$$g(\hat{x}) = \frac{1}{k}\sum_{i=1}^{n} 1(||x - X_i|| \leqslant R_x)y_i \tag{3.2}$$

where R_x is the Euclidean distance between x and its kth nearest neighbor of x.

The weighted average of the k nearest neighbors is used for smoothing as follows:

$$g(\hat{x}) = \frac{\sum_{i=1}^{n} w\frac{||x-X_i||}{R_x}y_i}{\sum_{i=1}^{n} w\frac{||x-X_i||}{R_x}} \tag{3.3}$$

here, w represents a kernel weight function (Hansen 2009), for which I employ the nearest neighbor smoothing as noted above.

3.2.1 Measures

Our dependent variable is the absolute/average error. To calculate absolute error, I use the so-called Mosteller Method 3 (Mosteller et al. 1949, 55). It is equal to the absolute difference between the prediction of pollsters and actual votes. The lower the absolute error is, the higher the accuracy of the poll (or poll of the polls) to the observed election results. To reiterate, I take account of only domestic votes for the general and presidential elections to ensure comparability across polling estimates and election outcomes.

In the analyses reported below, I used three analytical weights based on three variables:

Sample size: The margin of error decreases as the sample size increases in random sampling. Therefore, I give higher weights to polls including more participants. Polls with missing sample sizes are set to 2400 (assuming random sampling and p=.5, it would lead to a margin of error of ±2 percentage points). The highest sample size in our sample is 33000 (MAK for June 2019 Elections) and the lowest size is 500 (Foresight for 2018 Elections). The average sample size without the polls with missing sample size data is 4482.

The poll score is based on the revised CNN index: Chapter two explains the details

of the grading scheme according to the (revised) CNN Index. The score of each item (question) used in generating the index variable and the sum of the scores are normalized to score between 0 and 100. Polls that get a total score of 0 are omitted from the analyses.

Firm experience: Experience can be an important determinant of poll success. Therefore, pollsters who have been in the polling industry for a long time are given higher weights. The firm experience ranges between one year (TEAM) and 34 years (Konda). The average year of experience is 13 years.

3.3 Empirical Analyses and Findings[2]

3.3.1 Pre-election Polls for the June 12, 2011, General Elections

AK Party received 34.28% of the votes in the 2002 General Elections, and the party has dominated the electoral scene since then. AK Party's vote share increased to 46.58% in the 2007 General Elections and 49.83% in the 2011 General Elections. One of the reasons for this increase, the decreasing support for right-wing parties other than MHP. Anavatan Partisi (Motherland Party, ANAP), Demokrat Parti (Democrat Party, DP) or its preceding DYP, Genç Parti (Young Party, GP), SP, and Halkın Sesi Partisi (People's Voice Party, HSP). These parties received 24.41% of the votes in 2002, 10.80% in 2007, and 2.84% in 2011 (Çarkoğlu 2011).

AK Party's campaign primarily focused on the economy, development, and Kurdish issue (Aydın-Düzgit 2012). First, the Turkish economy recovered well from the 2019 economic crisis compared to European countries. The high growth rate and the reduced unemployment rate were highlighted during the campaign. Satisfaction with the economy was one of the determinants of the AK Party's victory (Kalaycıoğlu 2013). Second, AK Party emphasized the planned projects on health, education, housing, and transportation (Aslan-Akman 2012). Third, AK Party announced a democratization package that mostly focused on the Kurdish issue in 2009. Although democratization initiatives have been started, Demokratik Toplum Partisi

[2]The analyses below are based on the assumption that the elections in Turkey between 2011 and 2019 were held free and fair and there were no election irregularities that may have distorted the election outcomes.

(Democratic Society Party, DTP) was closed, and some Kurdish leaders were arrested for the allegation of support for terrorism. Together with the Kurdish issue, Ergenekon[3] and Balyoz[4] (Sledgehammer) trials increased the polarization between parties and voters. Some perceived these trials as democratization, while others perceived as government pressure on the opposition (Aydın-Düzgit 2012). Kemal Kılıçdaroğlu was voted as the CHP leader in May 2010. In contrast to previous CHP campaigns that emphasized secularism and nationalism, his campaign focused more on economic issues, welfare, freedom, democracy, and corruption. MHP's campaign also emphasized the economic difficulties and poverty (Cengiz and Hoffmann 2011). Moreover, MHP was against the democratization initiatives and claimed that AK Party poses a threat to national security. Barış ve Demokrasi Partisi[5] (Peace and Democracy Party, BDP) emphasized the equality and cultural rights of minorities. BDP nominated independent candidates because of the 10% electoral threshold (Aslan-Akman 2012).

In sum, the 2011 General Elections show that economic developments and decreasing support for many right-wing parties paved the way for AK Party's remarkable success. AK Party received 49.83% of the total valid votes, CHP received 25.98%, MHP received 13.01%, Independents received 6.57%, other parties received 4.66%. Because vote shares of other parties are below the average margin of error, the average absolute is calculated as follows:

$$\text{AME}_{\text{June 2011}} = (|AKParty - AKParty_{\text{AK P̂arty}}| + |CHP - CHP_{\text{ĈHP}}| + |MHP - MHP_{\text{M̂HP}}| + |BDP - BDP_{\text{B̂DP}}| + |Other - Other_{\text{Ôther}}|)/5$$

Figure 3.1 presents the average absolute errors of the polls for the June 2011 General Elections. Based on the reported sample sizes, average errors greater than the estimated margin of error at 95% confidence level are indicated with red color and smaller ones with green. Polls with unreported sample size are excluded from the regression analysis and indicated with unfilled markers. Among the examined polls, nine polls had larger and 10 polls had a smaller average error than the margin of error at 95% confidence level, and five polls had not reported their sample sizes. Pollsters who had higher average errors have usually underestimated AK Party's support. The average absolute error is 1.83 among the 26 polls. The highest absolute error

[3]In the Ergenekon trials, 275 people from military officers, journalists, and lawmakers were alleged of plotting a coup against the Turkish government.

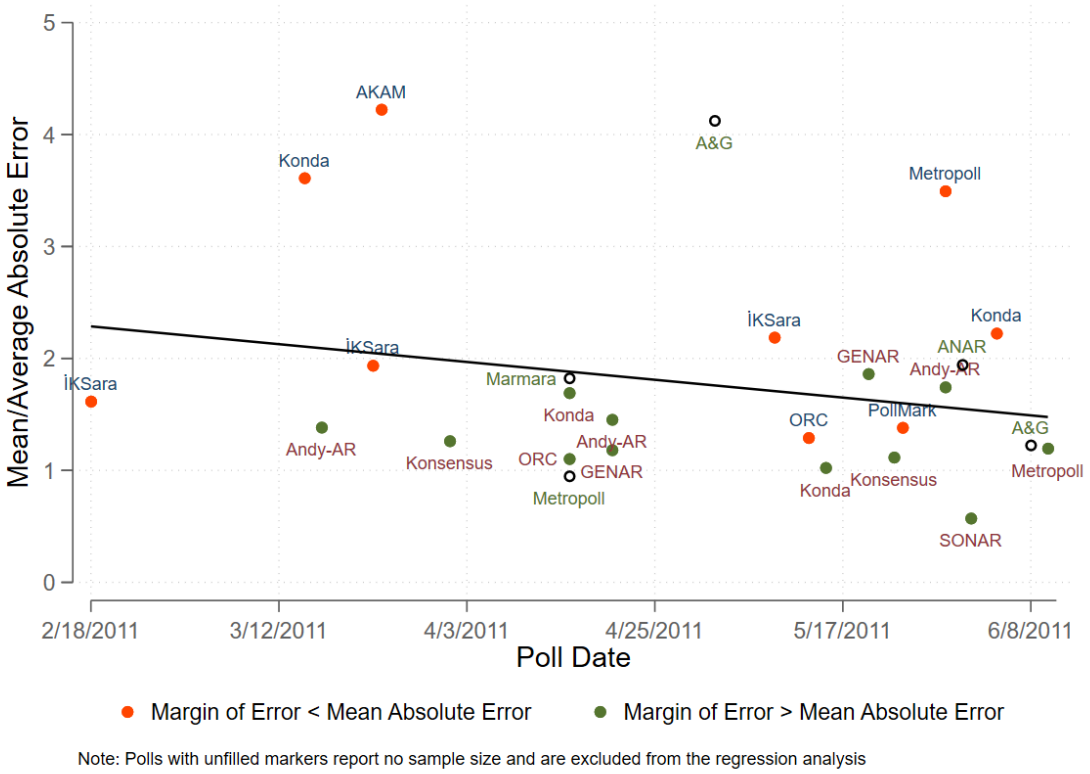
[4]In the Balyoz trials, 365 people from military officers and prosecutors were accused of planning a coup against the Turkish government.

[5]BDP was founded by Selahattin Demirtaş and Gülten Kışanak shortly after the dissolution of DTP in 2008.

is 4.22 –from a poll conducted by AKAM 80 days before the election date. The average experience of pollsters is the highest, with 19.85 years, among all examined elections.

As Figure 3.1 shows, the average absolute error decreases as the election day draws closer. Indeed, Jennings and Wlezien (2018) argue that polling error declines over the election campaigns in other countries. This decline is not surprising because both the election campaign and individual preferences become more crystallized as the election day approaches. Moreover, the non-response rate and survey satisficing decreases as the election approaches (Banducci and Stevens 2015).

Figure 3.1 Mean/Average Absolute Error of Polls for the June 2011 General Elections

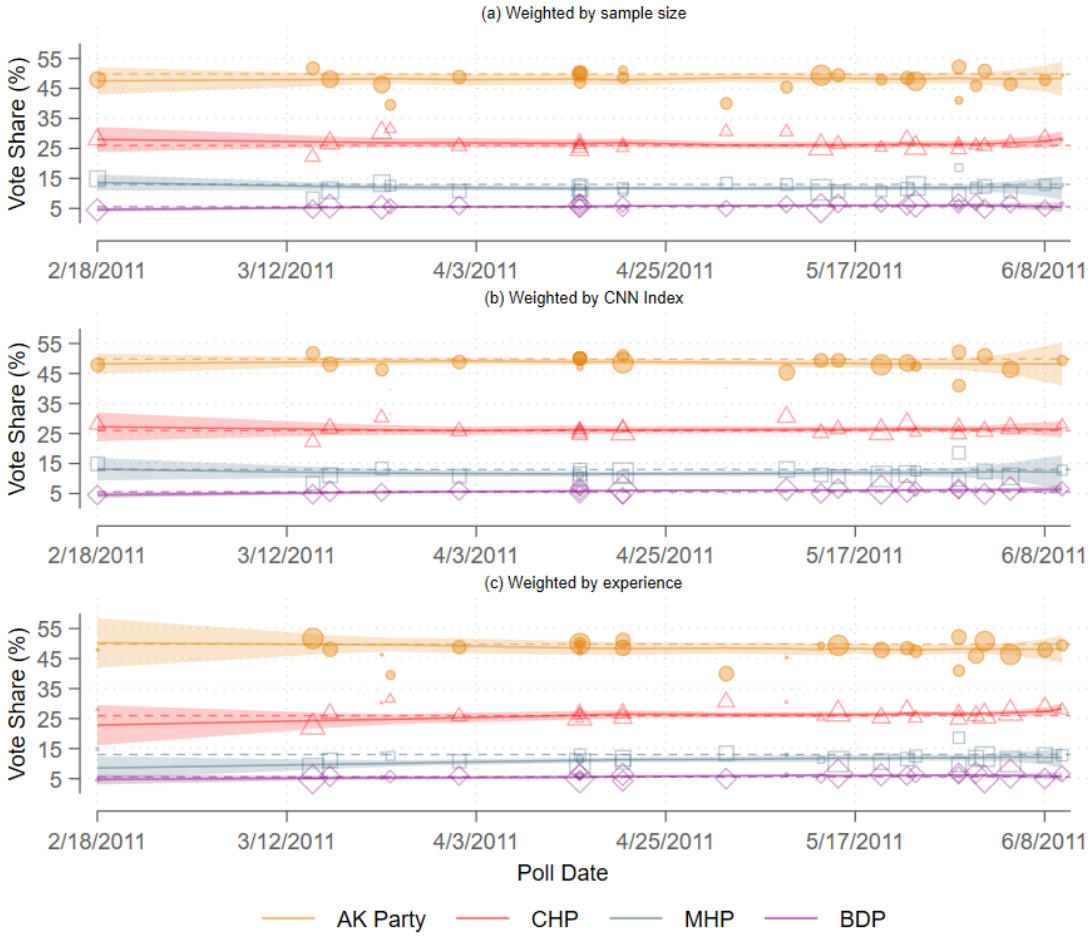


Figures 3.2 plot the polling estimates of the three parties' vote shares and candidates supported by BDP. Figure 3.2.a plots weighted estimates by sample size, Figure 3.2.b plots weighted estimates by CNN Index, and Figure 3.2.c plots weighted estimates by firm experience. In all the three plots, the confidence intervals around the average vote share estimates include the observed vote shares (indicated with dashed lines) of the three parties and candidates supported by BDP. As all three plots indicate, many polls were within the calculated confidence intervals, and only some were inaccurate in their estimates.

All polls forecasted the AK Party to win the elections, but some polls underestimated the party's vote share and overestimated former powerful parties that vanished from this election's electoral scene. In the beginning, polls predicted AK Party's win, CHP's second position, MHP's success to pass the electoral threshold, and an increase in independent candidates supported by BDP. Moreover, the curves show that parties' vote shares were stable during the election campaign except for BDP. BDP's vote shares have slightly increased until the election day. The stability of votes might indicate that voters' decisions were shaped by strong partisanship, so the election campaign did not change their minds.

There are, however, some differences between the three polls of polls in Figures 3.2.a-3.2.c. The first of those is regarding the confidence intervals, which are much wider for the estimates weighted by the firm experience at the beginning of the election campaigns. That is because there is only one poll in the first 25 days of this period. In a similar vein, confidence intervals are much wider for the estimates weighted by the CNN Index at the end of the examined period. That is because there is more variance in the index scores of the most recent polls. The second difference is that the accuracy of forecasted vote shares of the parties varies across the weighting methods. The estimates weighted by the CNN Index are the most successful in forecasting AK Party's and CHP's vote shares, those weighted by sample size are better estimating MHP's vote, and those weighted by experience are better in estimating BDP's vote. Overall, CNN Index is the best weighting method among the three since it has the smallest absolute average error.

Figure 3.2 Polling Estimates of Party Vote Shares for the June 12 General Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.2 Pre-election Polls for the March 30, 2014, İstanbul and Ankara Mayoral Elections

A comparison of the 2014 Mayoral Elections with the previous mayoral elections is challenging because the number of metropolitan municipalities increased from 16 to 30, and electoral borders expanded in those 30 metropolitan municipalities in 2012 (Resmi Gazete 2012). Çarkoğlu (2014*a*) developed two methods to make election results comparable. Both his comparisons show that electoral support for AK Party decreased compared to 2011, but increased compared to 2009. CHP and MHP increased their vote shares compared to 2009 and 2011. BDP and HDP[6] ran

[6] A pro-minority political party, HDP, was established in October 2012.

separately: while BDP candidates mostly ran in the southeast Turkey and HDP ran in the rest of the country (Bianet 2013).

Two incidents had significantly influenced the election campaigns. The first one is the Gezi Park protests that started in May 2013.[7] Secondly, corruption allegations were made against the cabinet members in December 2013. AK Party framed both incidents as external powers' intervention to Turkey's internal affairs. Indeed, these developments increased polarization in society. Moreover, economic conditions were getting worse. However, protests and corruption allegations along with the deteriorating economy did not lead to a more significant decrease in AK Party's support (Çarkoğlu 2014*b*).

AK Party received 43.13% of valid votes in Turkey, CHP could receive 26.45%, MHP 17.76%, BDP-HDP 6.19%, and other parties 6.47%. In İstanbul, AK Party candidate Kadir Topbaş received 47.95% of the valid votes, CHP candidate Mustafa Sarıgül could receive 40.08%, MHP candidate Rasim Acar could receive 3.96%, HDP candidate Sırrı Süreyya Önder could receive 4.84%, and other candidates received 3.16%. Because the vote shares of other parties were below the average margin of error, I calculated the average absolute as follows:

$$\text{AME}_{\text{March 2014}} = (|Topbaş - \hat{Topbaş}_{\text{Topbaş}}| + |Sarıgül - \hat{Sarıgül}_{\text{Sarıgül}}| + |Acar - \hat{Acar}_{\text{Acar}}| + |\text{Önder} - \hat{\text{Önder}}_{\text{Önder}}| + |Other - \hat{Other}_{\text{Other}}|)/5$$

In Ankara, AK Party candidate Melih Gökçek received 44.82% of valid votes, CHP candidate Mansur Yavaş could receive 43.82%, MHP candidate Mevlüt Karakaya could receive 7.77%, HDP candidate Salman Kaya could receive 0.87%, and other candidates received 2.72%. Because the vote shares of both the HDP and other parties were below the average margin of error, the average absolute is calculated as follows:

$$\text{AME}_{\text{March 2014}} = (|Gökçek - \hat{Gökçek}_{\text{Gökçek}}| + |Yavaş - \hat{Yavaş}_{\text{Yavaş}}| + |Karakaya - \hat{Karakaya}_{\text{Karakaya}}| + |Other - \hat{Other}_{\text{Other}}|)/4$$

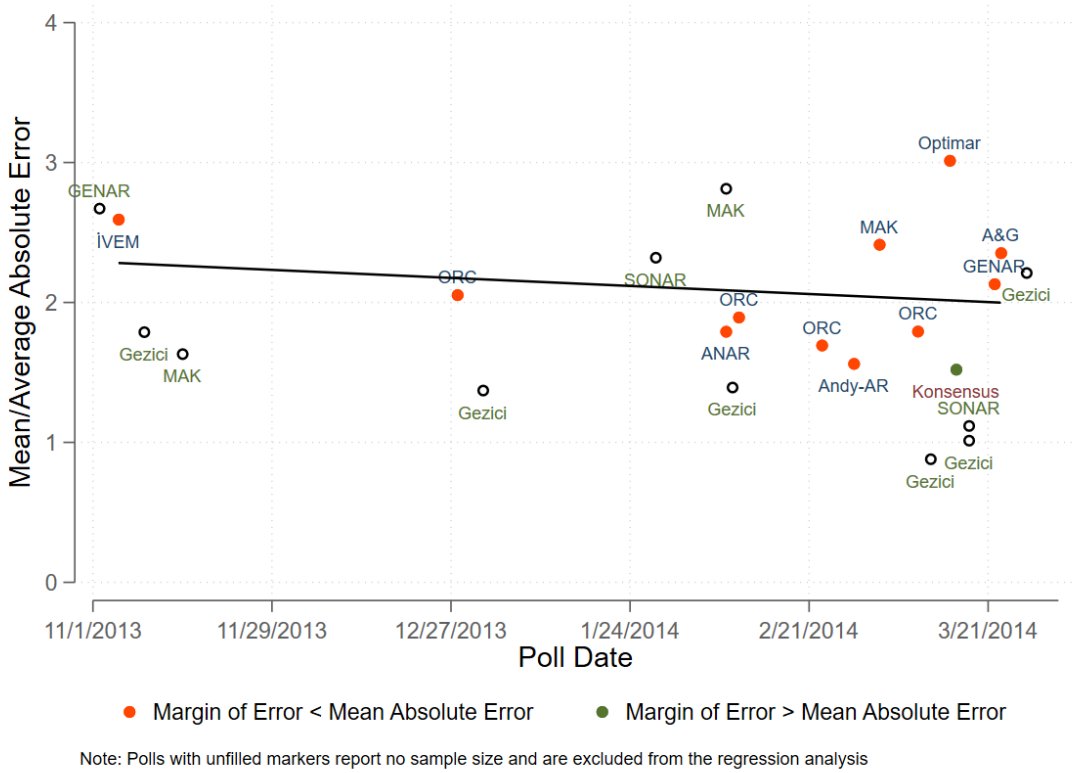
Figure 3.3 presents the average absolute errors of the polls for the March 2014 İstanbul Mayoral Elections. Among the examined polls, 11 had larger average errors

[7] Although it started with 50 people for protecting Gezi Park, the number of protestors quickly increased and turned into anti-government protests. Excessive use of violence and polarized statements of Erdoğan caused the protests to spread to other cities. According to İnsan Hakları Derneği (Human Rights Association, İHD) (2013), there were protests in 79 out of 81 cities, and almost three million people (approximately 4% of the total population) attended.

than their margins of error, and only one poll (Konsensus) had a smaller average error at 95% confidence level based on the reported sample sizes, and 11 polls had not even reported their sample sizes. Pollsters with higher average errors had usually underestimated AK Party's and CHP's support, and overestimated HDP's and MHP's support. The average absolute error is 1.92 among the 23 polls. The highest absolute error is 3.01 –from a poll conducted by Optimar 15 days before the election date.

As shown in Figure 3.3, the average absolute error decreases as the election date gets closer in line with the theoretical expectations in literature (Jennings and Wlezien 2018). However, this decrease is not impressive due to the high number of polls with unreported sample sizes. This is despite that the average pollster experience is 17.83 years.

Figure 3.3 Mean/Average Absolute Error of Polls for the March 2014 İstanbul Mayoral Elections



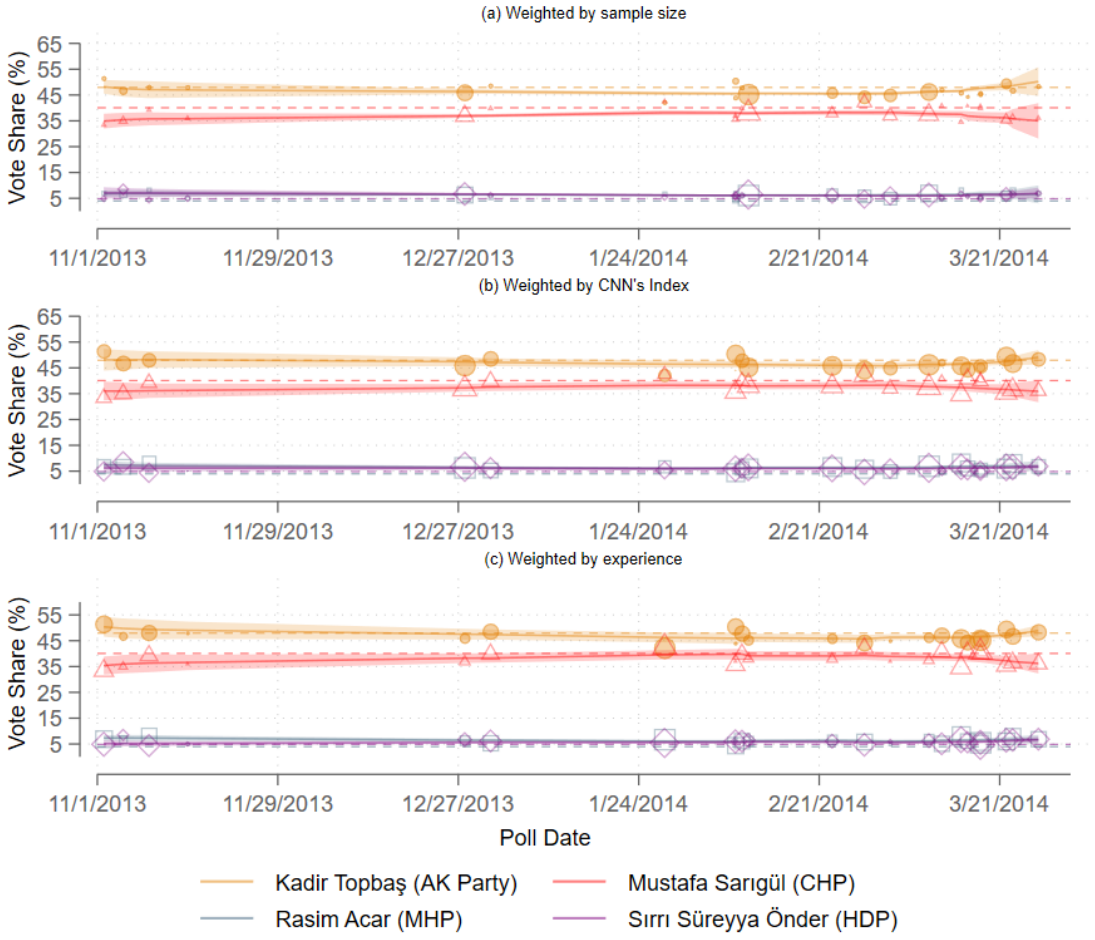
Note: Polls with unfilled markers report no sample size and are excluded from the regression analysis

Figures 3.4 plot the polling estimates of the vote shares of the four candidates. Figure 3.4.a plots the weighted estimates by sample size, Figure 3.4.b plots the weighted estimates by CNN Index, and Figure 3.4.c plots the weighted estimates by firm experience. In all three plots, the confidence intervals around the average vote share estimates include the observed vote shares of the four candidates.

Although the polls of polls once again prove to be a successful forecasting tool, individual markers (i.e., polls) in Figures 3.4.a, 3.4.b, and 3.4.c also demonstrate that some individual polls were quite inaccurate in their estimates. Indeed, all polls predicted Topbaş to win the elections and Sarıgül would come the second, but some polls underestimated Topbaş's vote share, and overestimated Acar's and Önder's votes. Moreover, support for Sarıgül until the beginning of March, especially in the last week, seems to have fluctuated. In contrast, Topbaş's support decreases until the beginning of March and then increases. Such unexpected trends in the last week could be due to the low number of polls (three) or questionable practices in allocating undecided voters. Moreover, changes in intended votes might indicate that the election campaign influenced voters. In contrast to Topbaş's and Sarıgül's clearer trends, polling estimates for Acar and Önder are not distinguishable from each other. Support for both candidates had also been more stable until the last week of the campaign period.

There are some differences between the three sets of estimates. The first one is about the confidence intervals, which are much narrower for the estimates weighted by the sample size. That is because there are 11 polls with sample sizes that are imputed to be 2400. So, a high similarity between the sample sizes decreases the width of the confidence intervals. The second difference is that the candidate preferences are slightly more stable for the estimates weighted by the CNN Index. Third, the estimates weighted by the firm experience are the most successful in forecasting all candidates' vote shares. Indeed, the average pollster experience was pretty high (17.83), ranging from six years to 32 years. Lastly, the estimates weighted by the sample size are the least accurate, which is once again likely due to the higher ratio of polls with missing sample sizes.

Figure 3.4 Polling Estimates of Candidate Vote Shares for the March 30 İstanbul Mayoral Elections

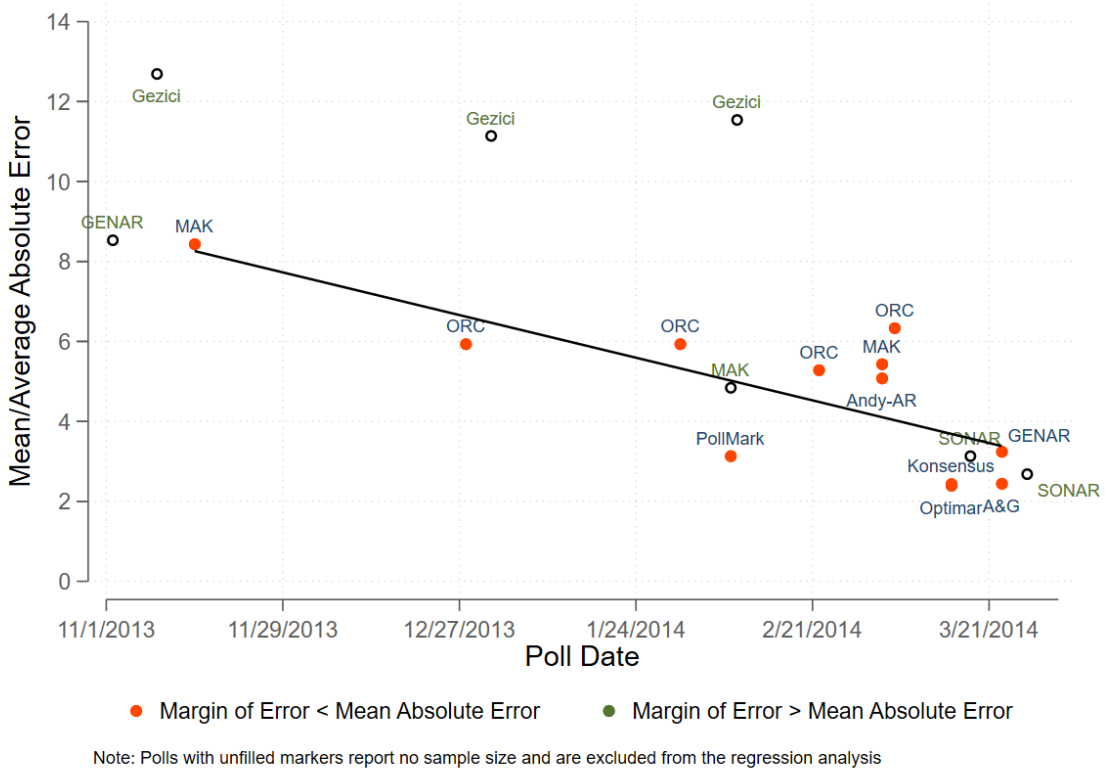


Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

Figure 3.5 presents the average absolute errors of the polls for the March 2014 Ankara Mayoral Elections. Among the examined polls, 12 polls had larger average errors than the margin of error, no poll has a smaller average error at 95% confidence level, and seven polls had not reported their sample sizes. Indeed, polls with the highest average errors were usually conducted early in the election campaign. The average absolute error is 5.83 among the 19 polls. Polls with the highest absolute error had overestimated MHP's vote and underestimated CHP's vote. The highest absolute error is 12.70 –from a poll conducted by Gezici 200 days before the election date. Gezici overestimated MHP's vote share by 22.93% and overestimated CHP's vote share by 13.92% and AK Party's vote share by 10.22% compared to the actual election outcomes.

As Figure 3.5 shows, the average absolute error once again decreases as the election date gets closer in line with previous literature (Jennings and Wlezien 2018).

Figure 3.5 Mean/Average Absolute Error of Polls for the March 2014 Ankara Mayoral Elections



Figures 3.6 plot the polling estimates of the vote shares of the three candidates. Figure 3.6.a plots the weighted estimates by sample size, Figure 3.6.b plots the weighted estimates by the CNN Index, and Figure 3.6.c plots the weighted estimates by firm experience. In all three plots, the confidence intervals around the average vote share estimates include the three candidates' observed vote shares.

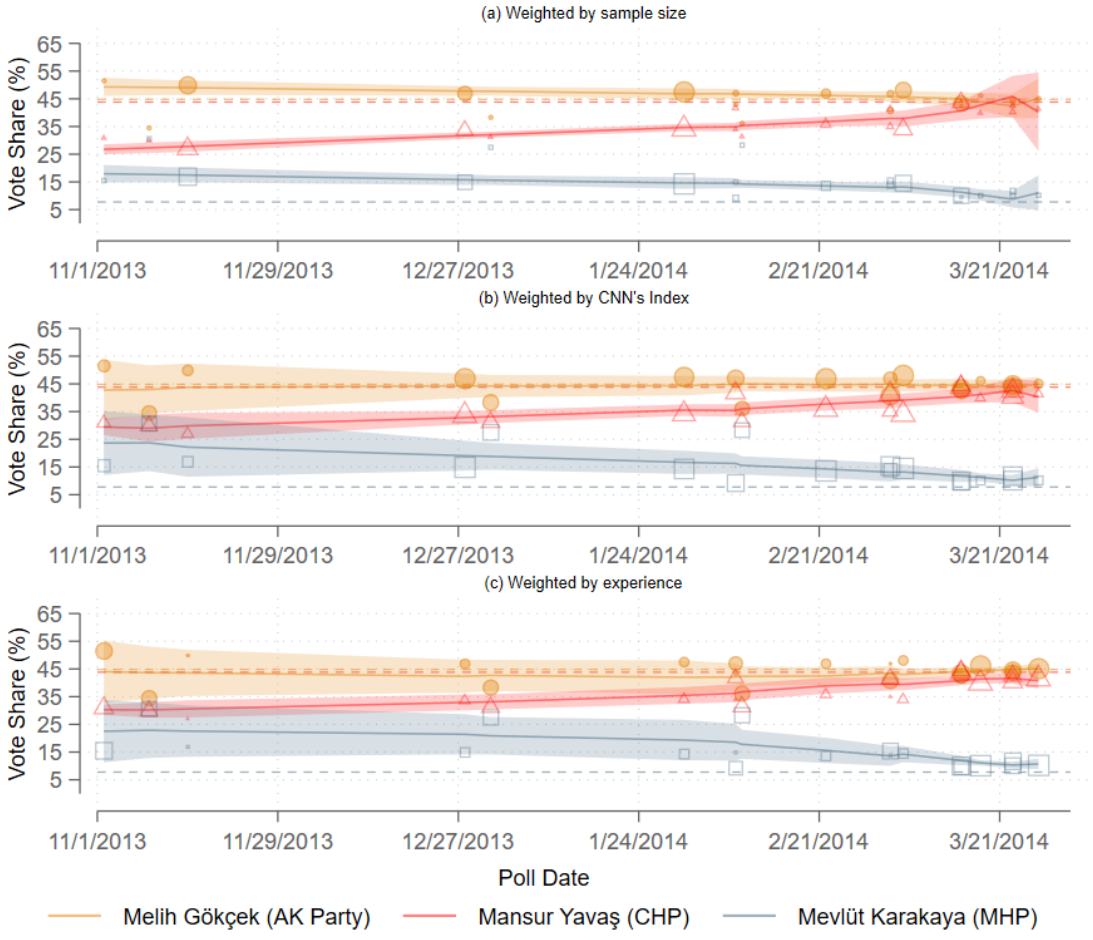
Although many polls were within the calculated confidence intervals, closer inspection of Figures 3.6.a-3.6.c reveals that some individual polls were inaccurate in their estimates. Especially, pollsters might be challenged to capture the changing support between Karakaya and Yavaş. Karakaya's vote share was significantly overestimated at the beginning of the campaign period, which had decreased dramatically throughout the campaign period. Even though Gökçek's win was decisive until the last month, Yavaş's win seemed possible in the more recent polls.

In contrast to the polls for the 2011 General Elections and March 30 İstanbul Mayoral Elections, voter preferences were much more volatile in this election, especially for Yavaş and Karakaya. The difference between Karakaya and Yavaş had also grown over time. This increase could be due to the ideological similarity between the two candidates: Yavaş left MHP and joined CHP in late 2013 (Hürriyet 2013).

Fluctuations in Gökçek's support are less evident. The voters probably knew his stance and policy offerings, since Gökçek was first elected as the mayor of Ankara in 1994.

There are, however, some differences between the three polls of polls in Figures 3.6.a-3.6.c. The first one is about the confidence intervals, which are much narrower for the estimates weighted by the sample size. That is because there are seven polls with sample sizes set to 2400. So, a high similarity between sample sizes decreases the length of confidence intervals. Moreover, confidence intervals around the estimates weighted by the CNN Index are much higher due to the high variance in neighboring polls. The second difference is that candidate support is slightly more stable in the estimates weighted by firm experience. Third, the estimates weighted by the sample size are the most successful in forecasting Gökçek's and Karakaya's vote shares, and those weighted by the experience are the most successful in forecasting Yavaş's vote share. Firm experience is the least successful among the three methods in forecasting the election outcomes, although the average pollster experience was 17.68 years. In short, the most successful weighting method among the three is the sample size.

Figure 3.6 Polling Estimates of Candidate Vote Shares for the March 30 Ankara Mayoral Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.3 Pre-election Polls for the August 10, 2014, Presidential Elections

Turkey's first presidential elections were held on August 10, 2014. AK Party candidate Recep Tayyip Erdoğan was elected in the first round and became the first partisan president. However, turnout was lower with 74.13% in comparison to previous elections, and a higher turnout would result in a second-round (Özbudun 2015).

Erdoğan's campaign mainly focused on being an active president rather than a symbolic one. Also, he emphasized the importance of transforming the parliamentary system into a presidential system to maximize the state's power. During the campaign, state-owned Türkiye Radyo Televizyon Kurulu (Turkish Radio and Tele-

vision Corporation, TRT) was heavily criticized for its favoritism of Erdoğan (Beyaz Gazete 2014; İnternet Haber 2014; Sözcü 2014). CHP and MHP jointly nominated Ekmeleddin İhsanoğlu, who is known as a conservative academic and diplomat. His candidacy was announced one month before the election, so he had a limited time for his campaign. In contrast to Erdoğan, he argued that politics should be performed in parliament (Çarkoğlu 2015). Moreover, he could not receive the support of some voters of CHP and MHP. For Kemalist-wing and leftist-wing voters of CHP, he was too conservative. Also, some MHP voters found him not nationalist. Indeed, 8.4% of the CHP voters in the 2014 Mayoral Elections voted for Selahattin Demirtaş in this election, and 15.9% of the MHP voters voted for Erdoğan (Özbudun 2015). Selahattin Demirtaş was a joint candidate of HDP and BDP. His campaign focused on criticism of discrimination and equality for all citizens. He succeeded in getting votes from both AK Party and CHP and increased his votes by almost one million (Kalaycıoğlu 2015).

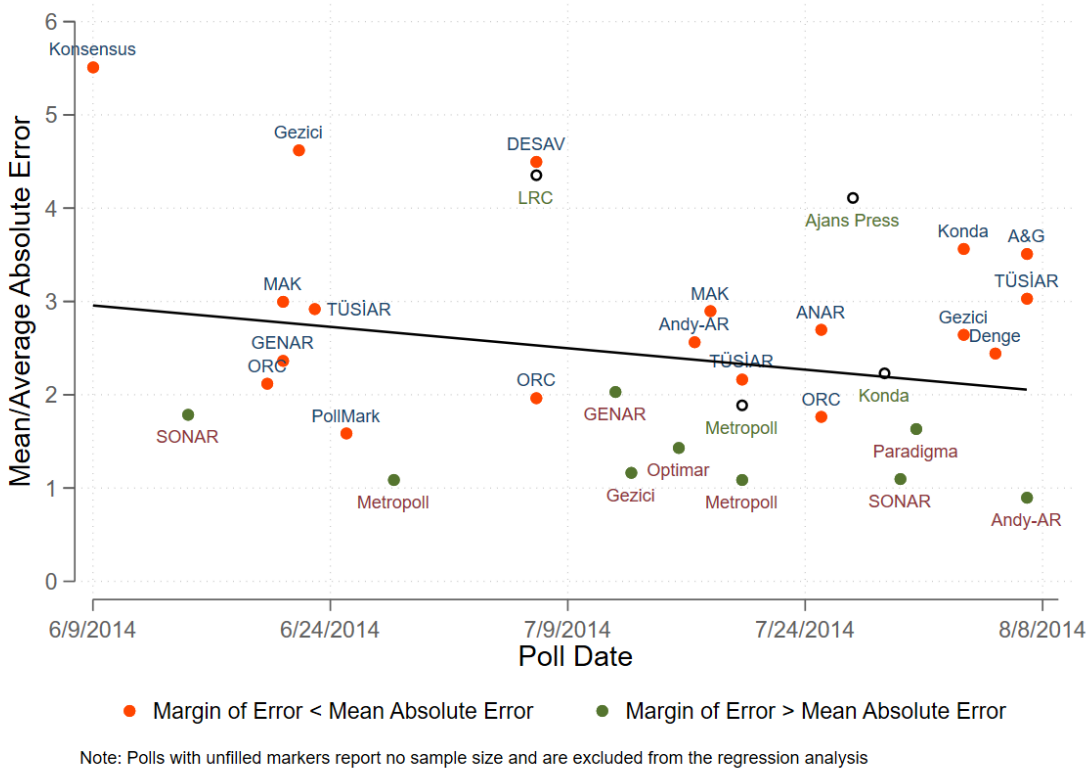
In sum, this election has shown the significant support for Erdoğan despite the heavy criticism of the opposition and some part of the population. Erdoğan received 51.79% of total valid votes, İhsanoğlu received 38.44%, Demirtaş received 9.79%. The average absolute is calculated as follows:

$$\text{AME}_{\text{August 2014}} = (|Erdoğan - Erdoğan_{\hat{\text{Erdoğan}}}| + |\text{İ}hsanoğlu - \text{İ}hsanoğlu_{\hat{\text{İhsanoğlu}}}| + |Demirtaş - Demirtaş_{\hat{\text{Demirtaş}}}|)/3$$

Figure 3.7 presents the average absolute errors of polls for the August 2014 Presidential Elections. In examined polls, 19 polls had larger average errors than the margin of error, nine polls had a smaller average error at 95% confidence level, and four polls had not reported sample size. Indeed, pollsters who had the highest average errors are usually conducted polls at an early election campaign. The average absolute error is 2.52 among the 32 polls. The highest absolute error is 5.52 –from a poll conducted by Konsensus, 62 days before the election date. İhsanoğlu's candidacy was not announced at the time.

As shown in Figure 3.7, the average absolute error decreases as the election date gets closer. The average error drops to 2.24 for the polls conducted in the last 30 days of the election campaign. Moreover, polls with higher absolute errors had usually overestimated Erdoğan's vote. Pollsters who conducted polls for this election have the second-highest pollster experience, with 18.44 years.

Figure 3.7 Mean/Average Absolute Error of Polls for the August 2014 Presidential Elections



Figures 3.8 plot the polling estimates of the vote shares of the three presidential candidates. Figure 3.8.a plots weighted estimates by sample size, Figure 3.8.b plots weighted estimates by CNN Index, and Figure 3.8.c plots weighted estimates by firm experience. In all the three plots, the confidence intervals around the average vote share estimates include the three candidates' observed vote shares.

It is necessary to note that some individual polls were inaccurate in their estimates, especially in Figure 3.8.a and Figure 3.8.c. Mainly, Erdoğan's vote share was overestimated and vote shares of İhsanoğlu's and Demirtaş's were underestimated. Indeed, İhsanoğlu was a new figure for voters, and his candidacy was announced only one month before the election, so forming opinions might take more time, especially for non-partisan or late deciders. For Demirtaş, pollsters might miss his support from other parties. Moreover, except for the very first and last weeks of the election campaign, support for candidates are steady, that can mark the importance of partisan voting, especially in a highly polarized environment.

There are some differences between the three polls of polls. The first one is about the confidence intervals, which are much narrower in the estimate weighted by the firm experience. That is because there is not much variance in the experience of

years in the polls. The second difference is that the candidate preferences are slightly more stable in the estimates weighted by firm experience and the least stable in the estimates weighted by CNN's Index. Third, the estimates weighted by the CNN Index are the most successful in forecasting Erdoğan's and İhsanoğlu's vote shares. The estimates weighted by the sample size are the most successful in forecasting Demirtaş's vote shares. The experience is the least successful in forecasting for this election. Overall, CNN Index is the most successful weighting method among the three.

Figure 3.8 Polling Estimates of Candidate Vote Shares for the August 10 Presidential Elections

Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.4 Pre-election Polls for the June 7, 2015, General Elections

In the June 2015 General Elections, AK Party lost its parliamentary majority and needed to form a minority or coalition government for the first time since 2002. However, attempts to form a coalition government yielded no result and called for a snap general elections in November.

During the campaign period, there were 187 violent attacks against political parties. Most of the attacks were against HDP (İnsan Hakları Derneği 2015). In this polarized environment, AK Party's campaign focused on developments in public services,mic achievements since Turkey's economic conditions were not good at the time. Also, transforming the system into a presidential system was another keystone of the campaign. Moreover, with the peace talks' end, the AK Party campaign focused on blaming HDP for terrorism claims. The CHP emphasized the deteriorating economy and state-level corruption, and the proposed development projects. MHP's campaign also highlighted increased unemployment and corruption with the nationalistic agenda (Kemahlıoğlu 2015). HDP's decision to run as a party rather than supporting independent candidates was very critical because of the 10% threshold. If the party remained under the threshold, its votes would be distributed proportionally among the parties that pass the threshold. HDP's campaign mostly focused on equality and inclusiveness. Both CHP and MHP emphasized that they are against the presidential system during the campaign period (Bardakçı 2016).

In sum, economic dissatisfaction (Kalaycıoğlu 2018) and HDP's success ended the single-party rule of AK Party's for the first time. AK Party received 40.87% of total valid votes, CHP could receive 24.95%, could receive 16.29%, HDP could receive 13.12%, and other parties could only receive 4.77%. Because vote shares of other parties are below the average margin of error, the average absolute is calculated as follows:

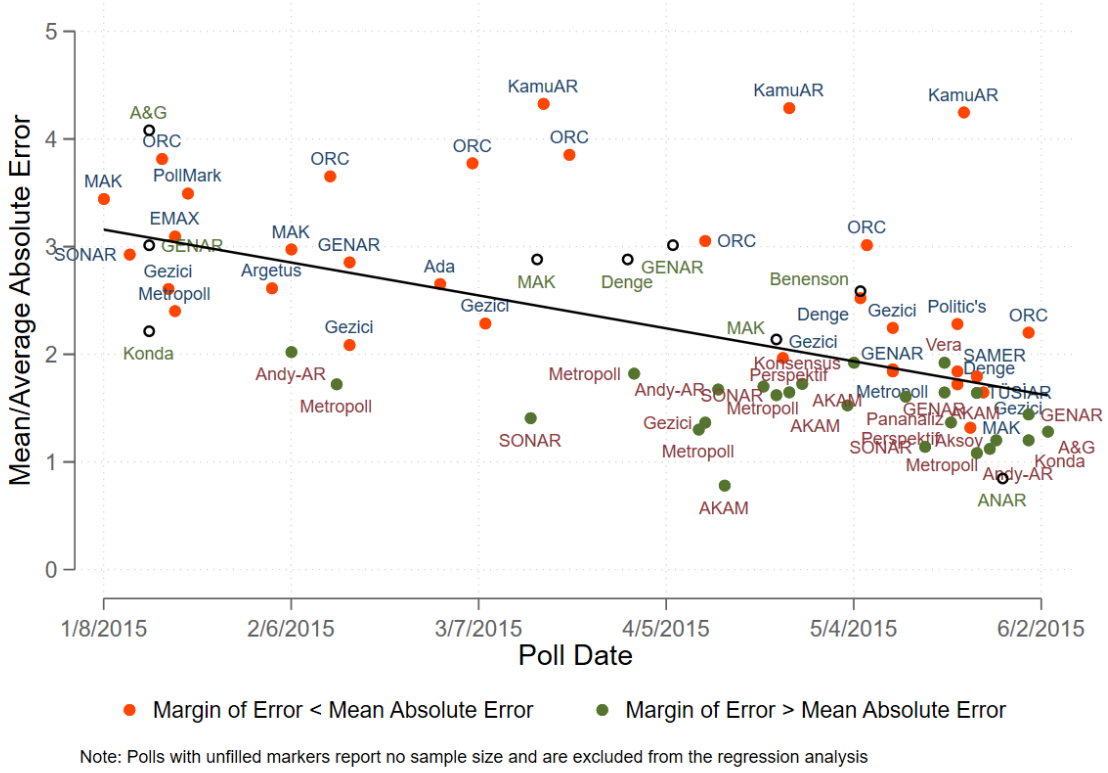
$$\text{AME}_{\text{June 2015}} = (|AKParty - AKParty_{\text{AK P̂arty}}| + |CHP - CHP_{\text{CĤP}}| + |MHP - MHP_{\text{MĤP}}| + |HDP - HDP_{\text{HD̂P}}| + |Other - Other_{\text{Otĥer}}|)/5$$

Figure 3.9 presents the average absolute errors of polls for the June 2015 General Elections. Based on the reported sample sizes, 33 polls had average errors greater than the estimated margin of error at 95% confidence level, and 26 polls had smaller average errors than the margin of error. Nine polls with unreported sample size are excluded from the regression analysis. The average absolute error is 2.26 among the 68 polls. The highest absolute error is 4.33 –from a poll conducted by KamuAR 82 days before the election date. Indeed, polls with higher absolute errors have usually overestimated AK Party's support and underestimated HDP's. The average pollster

experience is 16.09 years.

As Figure 3.9 shows, the average absolute error once again decreases as the election date gets closer in line with previous literature (Jennings and Wlezien 2018).

Figure 3.9 Mean/Average Absolute Error of Polls for the June 2015 General Elections



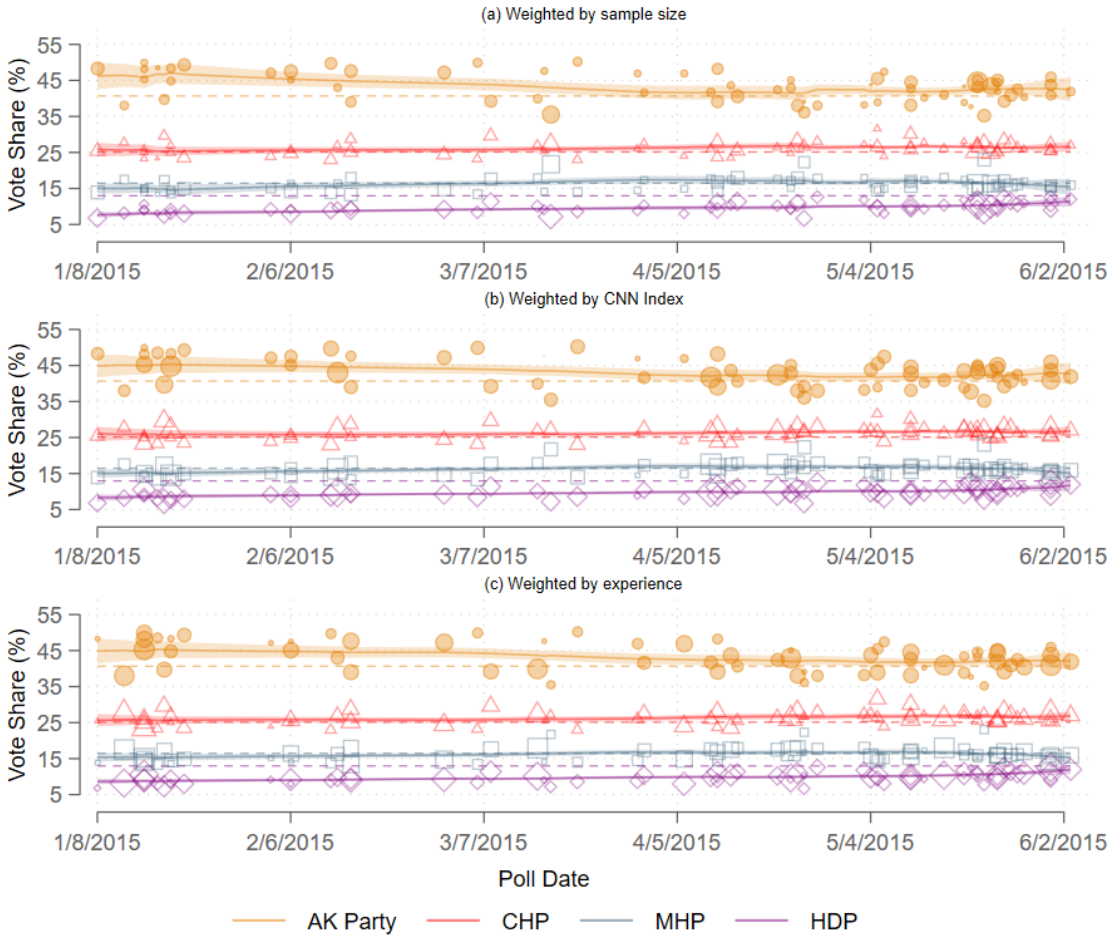
Note: Polls with unfilled markers report no sample size and are excluded from the regression analysis

Figures 3.10 plot the polling estimates of the vote shares of the four parties. Figure 10.a plots weighted estimates by sample size, Figure 10.b plots weighted estimates by CNN Index, and Figure 10.c plots weighted estimates by firm experience. In all the three plots, the confidence intervals around the average vote share estimates include the observed vote shares of the three parties. However, the confidence intervals around the estimates weighted by sample size do not include vote shares of HDP.

Although polls of polls prove to be a useful forecasting tool, individual markers in Figures 10.a, 10.b, and 10.c also indicate that several individual polls were inaccurate in their estimates. Especially, support levels for AK Party, CHP, and MHP were overestimated, and the support for HDP was underestimated. Even the highest estimate for HDP was below the actual result. Pollsters could have missed HDP's strategy to build upon to get votes from other parties to pass the threshold. More strikingly, support for HDP increases dramatically over time. Support for AK Party decreases and support for MHP increases until the last month of the election period,

then support for AK Party increases and support for MHP decreases. Support for CHP is more stable than other parties, but CHP slightly increases its support over time.

Figure 3.10 Polling Estimates of Party Vote Shares for the June 7 General Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.5 Pre-election Polls for the November 1, 2015, General Elections

After the failed coalition attempts, snap elections were held on November 1. AK Party was able to form a single government by significantly increasing its vote by 4.814.515. In addition, turnout increased from 83.92% to 85.23% with 1.676.988 increase in valid votes. CHP raised its vote share by 0.37%, while MHP and HDP lost vote shares, 4.37% and 2.36%, respectively.

Between two elections, violence became more prevalent. First, ISIL (the Islamic

State of Iraq and the Levant) attacked political activists in Suruç district of Şanlıurfa on July 20. Activists were having a press statement about their planned humanitarian aid to Kobani (a city in the Kurdish region of Rojava in northern Syria). Unfortunately, 34 people died, and more than 100 people were injured (Bardakçı 2016). Second, ISIL attacked political activists in Ankara during a peace rally. 102 people lost their lives because of the attack (Çarkoğlu and Yıldırım 2015). Because of the security concerns, campaign activities were restrained.

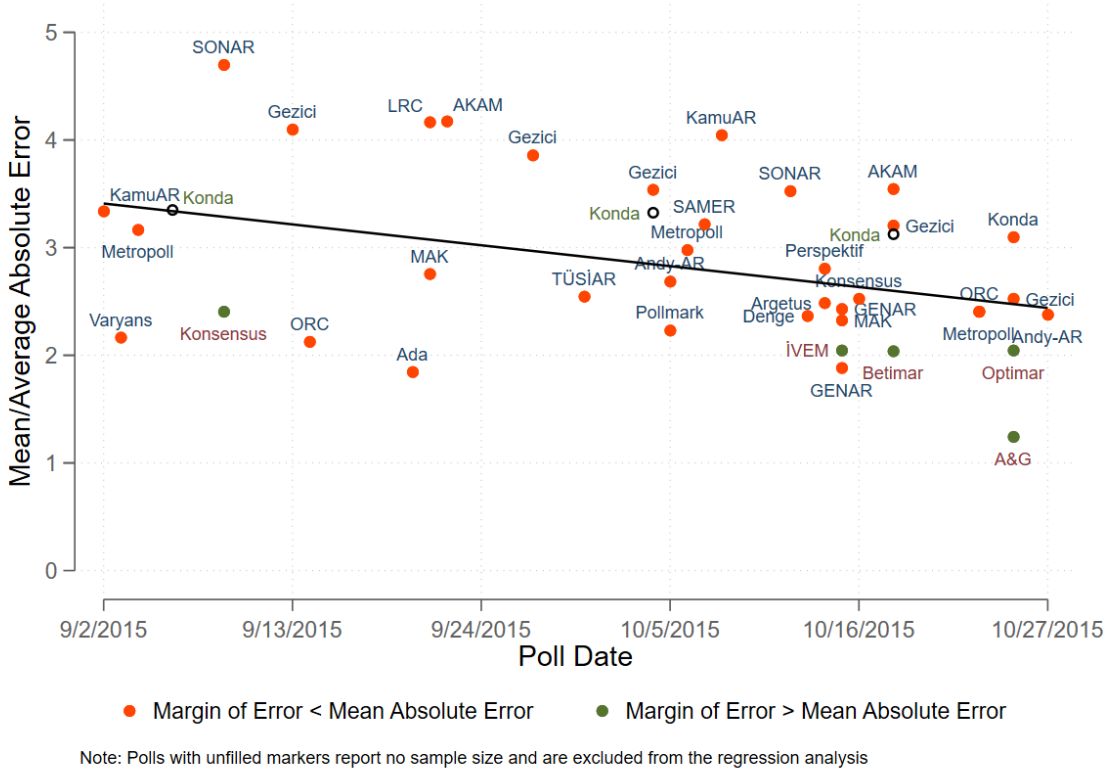
AK Party and MHP were against the coalition, and they both accused HDP of terrorism. AK Party's campaign emphasized the importance of a single government for stability and security. AK Party succeed in getting votes from both HDP and MHP supporters. HDP could manage to pass the threshold despite the allegations of AK Party and MHP (Kalaycıoğlu 2016). CHP and HDP held AK Party's policies responsible for ISIL attacks in Turkey and the end of the peace talks (Sayarı 2016).

In a violent and polarized environment, security concerns helped AK Party to gain its dominance (Çarkoğlu and Yıldırım 2015). AK Party received 49.50% of total valid votes, CHP could receive 25.32%, MHP could receive 11.92%, HDP could receive 10.76%, and other parties received 2.50%. Because the total vote shares of other parties are 2.50% of the total votes, hence below the average margin of error, the average absolute is calculated as follows:

$$\text{AME}_{\text{November 2015}} = (|AKParty - AKParty_{\text{AK P̂arty}}| + |CHP - CHP_{\text{CĤP}}| + |MHP - MHP_{\text{MĤP}}| + |HDP - HDP_{\text{HDP̂}}| + |Other - Other_{\text{Oth̊er}}|)/5$$

Figure 3.11 presents the average absolute errors of polls for the November 2015 General Elections. Based on the reported sample sizes, 33 polls had average errors greater than the estimated margin of error at 95% confidence level, and five polls had smaller average errors than the margin of error. Three polls with unreported sample size are excluded from the regression analysis. The average absolute error is 2.86 among the 41 polls. The highest absolute error is 4.70 –from a poll conducted by SONAR 53 days before the election date. Polls with higher absolute errors had overestimated MHP's and HDP's vote and underestimated AK Party's. Pollsters could not catch the dramatic change of the electoral support, although the average pollster experience is very high (17.61).

Figure 3.11 Mean/Average Absolute Error of Polls for the November 2015 General Elections



Figures 3.12 plot the polling estimates of the vote shares of the four parties. Figure 3.12.a plots weighted estimates by sample size, Figure 3.12.b plots weighted estimates by CNN Index, and Figure 3.12.c plots weighted estimates by firm experience. In contrast to previous elections, polls were off the mark for this election. The confidence intervals around the average vote share estimates do not include the observed vote shares of AK Party, MHP, and HDP. Polling estimates is successful for forecasting only CHP's vote shares.

Most of the polls were inaccurate in their estimates. Especially, pollsters could not detect AK Party's electoral comeback strength and could not detect its win to the parliamentary majority. AK Party managed to get votes from both Turkish and Kurdish voters. Indeed, an unforeseeable chaotic political environment during the inter-election era turned voters to AK Party for political stability. Even the highest estimate of AK Party, 47.2% by A&G, is smaller than the actual result. The average estimate is 42.4% for AK Party among 41 polls. The absolute error is 6.92 for AK Party, 1.56 for CHP, 2.93 for MHP, 2.13 for HDP. The violent and polarized environment made it harder to track public opinion. If pollsters used weighting according to June 7 Election results, it would be another source of more significant error since June 7 General Elections was exceptional. Since they do not report

weighting variables, it is not possible to know whether post-survey adjustments made estimates worse or not.

There are some differences between the three sets of estimates. The first difference is that the party preferences are slightly more stable in the estimates weighted by firm experience. The second difference is that the forecast success of the parties varies. The estimates weighted by sample size are the most successful in forecasting AK Party's and MHP's vote shares, estimates weighted by CNN Index are better in CHP's and HDP's vote. The estimates weighted by firm experience are the least successful in forecasting. Overall, the sample size is the best weighting method.

Figure 3.12 Polling Estimates of Party Vote Shares for the November 1 General Elections

Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.6 Pre-election Polls for the June 24, 2018, General and Presidential

Elections

For the first time, general and presidential elections were held together in Turkish electoral history. Moreover, the 2018 Elections were the first elections after transforming the Turkish parliamentary system into a presidential one. For the 2018 General Elections, parties formed alliances. AK Party, MHP and Büyük Birlik Partisi (Grand Unity Party, BBP) formed Cumhur İttifakı (People's Alliance, CI); CHP, IYI, SP, and Demokratik Parti (Democratic Party, DP) formed Millet İttifakı (Nation's Alliance, MI).

AK Party and MHP declared early elections. One of the critical reasons for the early elections' decision is Turkey's economic performance; the Turkish lira collapsed, inflation and unemployment rates were higher than 10% (Kirişçi and Onaylı 2018). Therefore, early election could minimize the negative effect of the economic worries and limit the opposition (Çarkoğlu and Yıldırım 2018). Opposition parties were against the early elections since the emergency law was still in effect after the coup attempt in July 2016. Also, HDP candidate and former chairman Selahattin Demirtaş was imprisoned as well as many politicians from HDP. Moreover, an early election could remove the newly established IYI[8] chance to participate in the elections. CHP moved 15 of its members of parliament to IYI. So, IYI was able to form a parliamentary group, which makes it eligible to participate in the elections (BBC News 2018).

Right-wing nationalist-populist discourses shaped CI and Erdoğan's campaign. They blamed opposition parties with terrorism (Çarkoğlu and Yıldırım 2018). HDP and CHP were accused of support for PKK, and IYI was accused of supporting the Gülen movement (Cumhuriyet 2018; Sözcü 2018). Moreover, economic issues were framed as external conspiracies on Turkey (Çarkoğlu and Yıldırım 2018). MI and Muharrem İnce emphasized the problems in justice, democracy, and economy. İnce used more inclusive rhetoric and showed a non-partisan stance to draw more attention from voters of other parties (Esen and Yardımcı-Geyikçi 2019). Akşener focused on nationalism, democracy, and justice. Campaigning for HDP and Demirtaş were more difficult. They focused on the anti-AK Party stance and emphasized the importance of passing the threshold. If HDP could not pass the threshold, seats of AK Party in the parliament would increase (Sözen 2019).

In sum, AK Party and Erdoğan maintained their dominant positions in the political arena. In the 2018 Presidential Elections, Erdoğan received 52.59% of the total valid votes and was elected as a president in the first round. İnce received 30.64% of valid

[8]IYI was established on October 25, 2017, by Meral Akşener, a parliament member from the MHP.

votes, Akşener could receive 7.29%, Demirtaş could receive 8.40%, other candidates (Temel Karamollaoğlu and Doğu Perinçek) could receive 1.09%. Because the total vote shares of Karamollaoğlu and Perinçek were 1.09% of the total votes, hence below the average margin of error, the average absolute is calculated as follows:

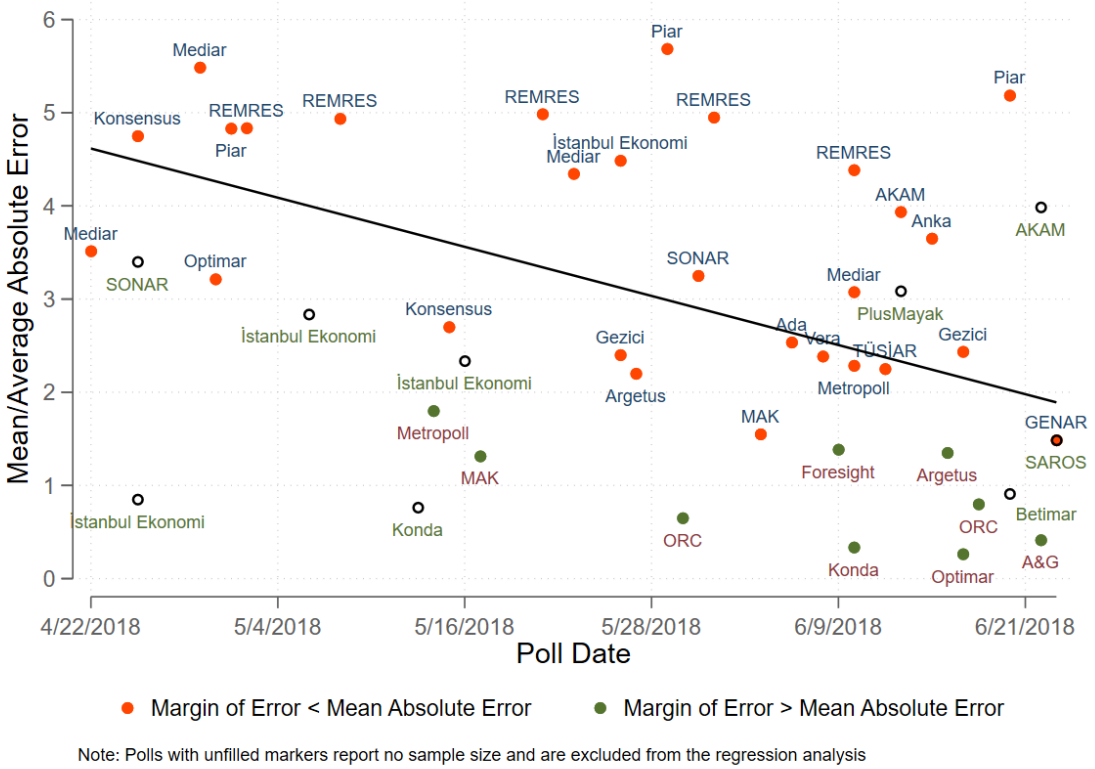
$$\text{AME}_{\text{June 2018}} = (|Erdoğan - Erdoğan_{\hat{\text{Erdoğan}}}| + |\text{İnce} - \text{İnce}_{\hat{\text{İnce}}}| + |Akşener - Akşener_{\hat{\text{Akşener}}}| + |Demirtaş - Demirtaş_{\hat{\text{Demirtaş}}}| + |Other - Other_{\hat{\text{Other}}}|)/5$$

In the 2018 General Elections, AK Party received 42.59%, CHP could receive 22.65%, MHP could receive 11.10%, IYI could receive 9.96%, HDP could receive 11.70%, SP could receive 1.34%, other parties and independents could receive 0.68%. Because the total vote shares of other parties were 0.68% of the total votes, hence below the average margin of error, the average absolute is calculated as follows:

$$\text{AME}_{\text{June 2018}} = (|CI - CI_{\hat{\text{CI}}}| + |MI - MI_{\hat{\text{MI}}}| + |HDP - HDP_{\hat{\text{HDP}}}| + |Other - Other_{\hat{\text{Other}}}|)/4$$

Figure 3.13 presents the average absolute errors of polls for the June 2018 General Elections. Based on the reported sample sizes, 28 polls had average errors greater than the estimated margin of error at 95% confidence level, and nine polls had smaller average errors than the margin of error. Nine polls with unreported sample size are excluded from the regression analysis. The average absolute error is 2.82 among the 46 polls. The highest absolute error is 5.69 –from a poll conducted by Piar 26 days before the election date. In fact, all examined polls with higher absolute errors had overestimated MI's vote and underestimated CI's. The average absolute error once again decreases as the election date gets closer in line with previous literature (Jennings and Wlezien 2018). The average pollster experience drops to 13.91 years with the existence of newer firms such as İstanbul Ekonomi, REMRES, and Piar.

Figure 3.13 Mean/Average Absolute Error of Polls for the June 24 General Elections



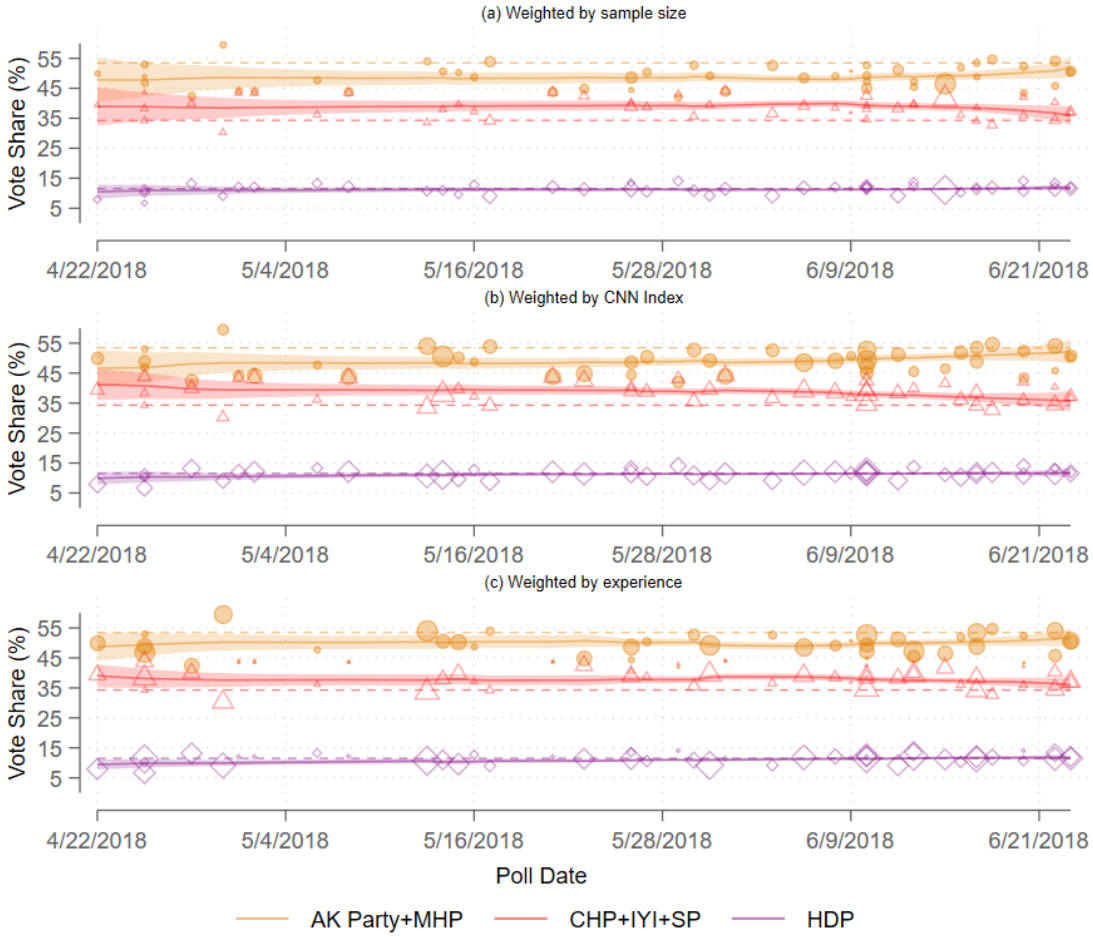
Figures 3.14 plot the polling estimates of the vote shares of the two alliances and HDP. Figure 3.14.a plots weighted estimates by sample size, Figure 3.14.b plots weighted estimates by CNN Index, and Figure 3.14.c plots weighted estimates by firm experience. In all three plots, the confidence intervals around the average vote share estimates include the observed vote shares of the two alliances and HDP.

Polls of polls successfully forecast electoral support, but some individual polls were inaccurate in their estimates as individual markers in Figures 3.14.a-3.14.c show. Significantly, MI's vote shares were overestimated, and support for CI was underestimated. However, support for CI increases and MI decreases during the election campaign and gets closer to the observed results. In contrast to CI and MI, support for HDP is more stable, showing the high partisanship of HDP voters. Indeed, imprisonment of politicians from HDP could have created a perception of unfairness and increased party loyalty among the HDP supporters.

There are some differences between the three sets of estimates. The first difference is that the confidence intervals are wider in the estimates weighted by sample size. The second is that the party preferences are slightly more stable in the estimates weighted by firm experience. The third difference is that the forecast success of the parties varies. The estimates weighted by sample size are the most successful

in forecasting HDP's vote shares, the estimates weighted by firm experience are better in forecasting CI's and MI's vote. Indeed, firm experience proposes the most accurate estimates, and sample size proposes the least accurate estimates.

Figure 3.14 Polling Estimates of Alliances/Party Vote Shares for the June 24 General Elections

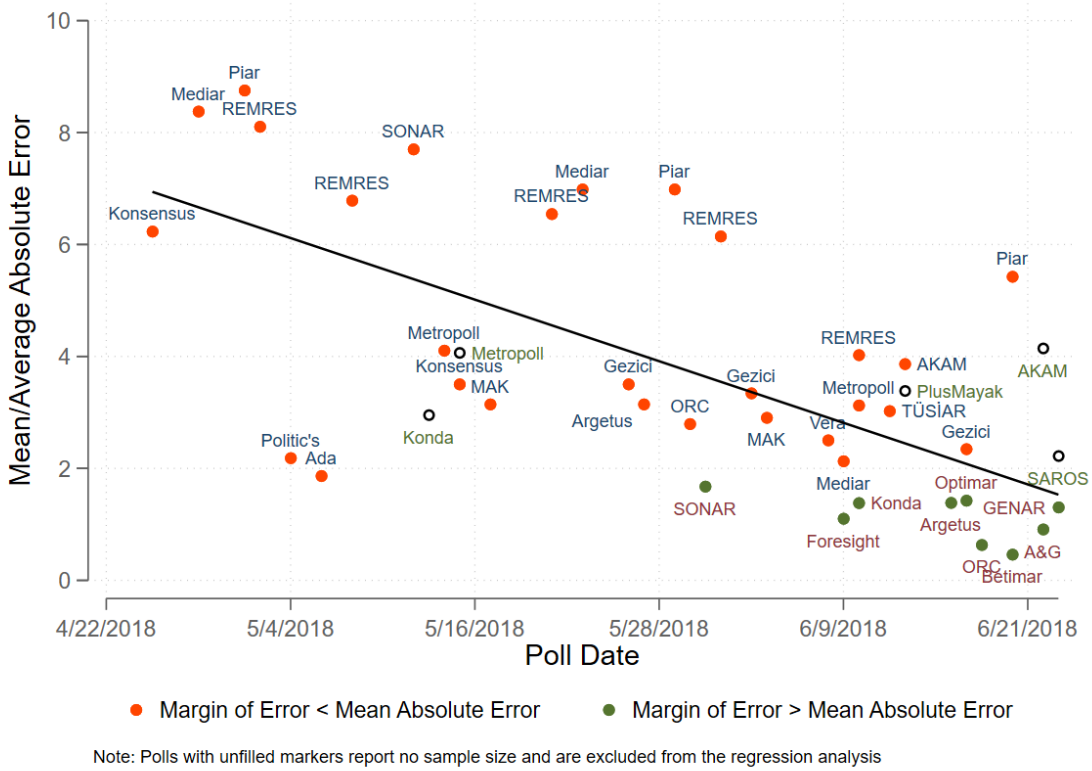


Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

Figure 3.15 presents the average absolute errors of the polls for the June 2018 Presidential Elections. Based on the reported sample sizes, 28 polls had average errors greater than the estimated margin of error at 95% confidence level, and nine polls had smaller average errors than the margin of error. Five polls with unreported sample sizes are excluded from the regression analysis. The average absolute error is higher than polls for the June 2018 General Elections, 3.73 among the 42 polls. The highest absolute error is 8.76 –from a poll conducted by Piar 54 days before the election date. In fact, polls with higher absolute errors had overestimated support for Akşener and Demirtaş, and underestimated for Erdoğan and İnce. As the election date approaches, the average absolute error decreases as expected (Jennings

and Wlezien 2018).

Figure 3.15 Mean/Average Absolute Error of Polls for the June 24 Presidential Elections



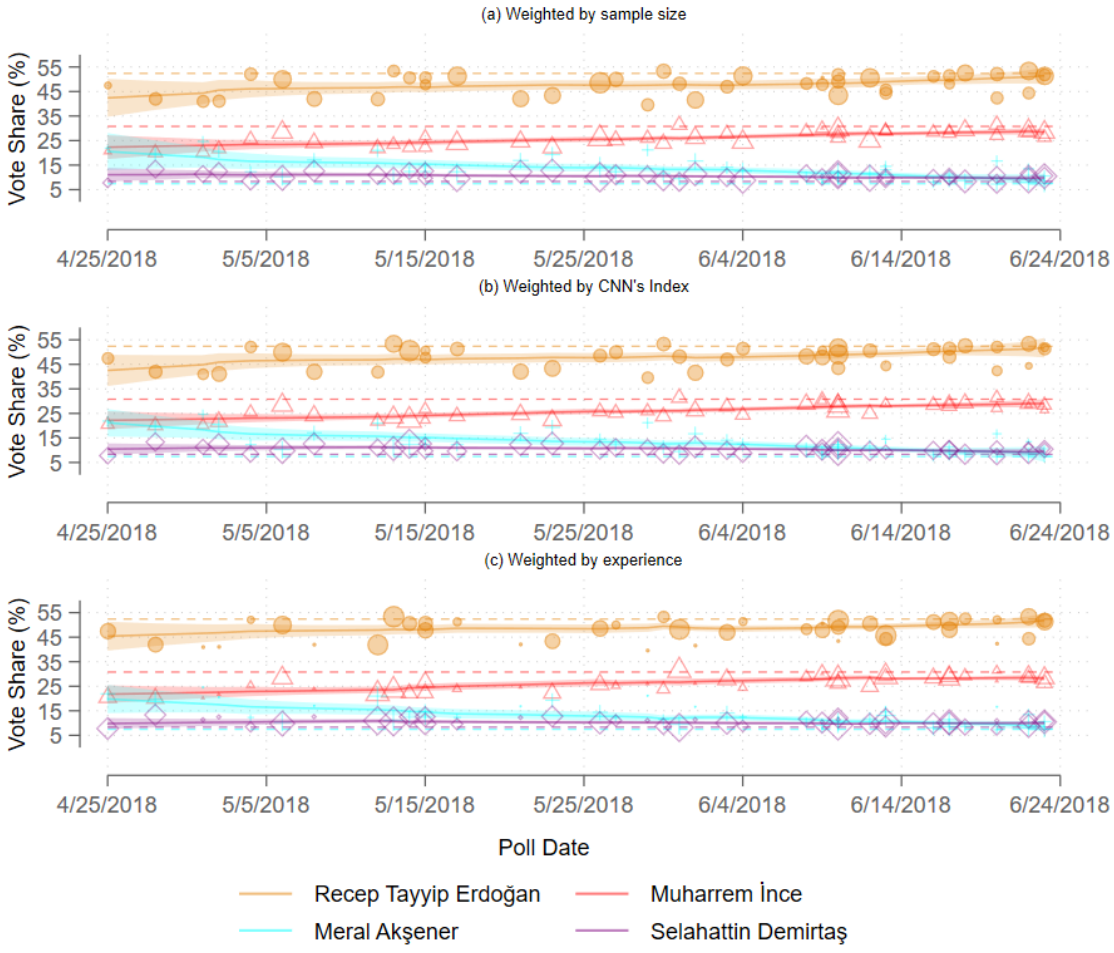
Figures 3.16 plot the polling estimates of the vote shares of the four presidential candidates. Figure 3.16.a plots weighted estimates by sample size, Figure 3.16.b plots weighted estimates by CNN Index, and Figure 3.16.c plots weighted estimates by firm experience. In all the three plots, the confidence intervals around the average vote share estimates include the observed vote shares of Erdoğan, İnce, and Demirtaş.

Although many polls were within the calculated confidence intervals, some polls were inaccurate in their estimates. Especially, Akşener's and Demirtaş's vote shares were overestimated, and Erdoğan's and İnce's support were underestimated. More specifically, polls were inaccurate in estimates for İnce. Only three polls among the 42 estimated İnce's vote over 30%. Similar to general elections, support for Demirtaş is more stable in contrast to other candidates. Support for Erdoğan and İnce increases, support for Akşener decreases during the election campaign and get closer to the observed results. Contrasting trends of İnce and Akşener could be due to alliances that made it hard to differentiate candidates' stances (Moral, Forthcoming). Also, Erdoğan's and media framing of electoral picture where only Erdoğan and İnce

compete could have helped İnce while damaging support for Akşener.

There are some differences between the three poll of polls in Figures 3.16.a-3.16.c. The first difference is that the confidence intervals are wider in the estimates weighted by sample size, especially for Erdoğan and İnce. The second is that the party preferences are slightly more stable in the estimates weighted by firm experience. The third difference is that the forecast success of the weighting methods differs. The estimates weighted by firm experience are the most successful in forecasting, and the estimates weighted by sample size are the least successful. Except for Akşener's vote share, the estimates weighted by firm experience are better in forecasting candidates' vote shares. The estimates weighted by CNN's Index are better in forecasting support for Akşener. Overall, the firm experience is the most useful weighting method for this election.

Figure 3.16 Polling Estimates of Candidate Vote Shares for the June 24 Presidential Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.7 Pre-election Polls for the March 31, 2019, İstanbul and Ankara Mayoral Elections

March 2019 Mayoral Elections were the first mayoral elections after transforming the Turkish parliamentary system into a presidential one. Instead of forming alliances with a legal framework, the candidates of two-party blocs ran in the elections. AK Party and MHP formed the CI, and CHP and IYI formed the MI. Some politicians in SP thought the weak performance of SP in the previous elections resulted from an alliance with secular CHP. Therefore, they ran separately in this election (Esen and Gümüşçü 2019). Albeit not formally a part of the Millet İttifakı, HDP supported this alliance from outside by not nominating a candidate in several, especially large, metropolitan cities.

Good economic performance had been one of the essential determinants of AK Party's political support (Aytaç 2020; Çarkoğlu 2012). The economic crisis starting one year before the elections had weakened AK Party's campaign. AK Party's campaign focused on democratic values in local governments. Moreover, opposition parties delegitimized by terrorism claims and the elections framed as a national security issue. In contrast to the CI's polarized campaign, the MI had nominated centrist and inclusive candidates with different ideological backgrounds. Candidates of CHP emphasized democracy, economic and local problems (Esen and Gümüşçü 2019). HDP had a challenging environment for campaigning since many of its politicians were imprisoned. HDP did not nominate candidates to support MI in several cities and mostly focused on Kurdish-populated cities.

In sum, this election shows that the opposition parties were gaining power due to economic issues and raised polarization. AK Party received 42.55% of the total valid votes, CHP could receive 29.81%, MHP could receive 7.44%, IYI could receive 7.76%, and HDP could receive 4.52%, SP could receive 2.91%, and other parties and independent candidates could receive 5.01%.

In İstanbul, Millet İttifakı/CHP candidate Ekrem İmamoğlu received 48.77% of valid votes. Cumhur İttifakı/AK Party candidate Binali Yıldırım had 48.60%. The total vote shares of other parties and independent candidates constituted only 2.63% of the total votes. The average absolute error is calculated as follows:

$$\text{AME}_{\text{March 2019}} = (|Yıldırım - Yıldırım_{\hat{\text{Yıldırım}}}| + |\text{İ}mamoğlu - \text{İ}mamoğlu_{\hat{\text{İmamoğlu}}}| + |Other - Other_{\hat{\text{Other}}}|)/3$$

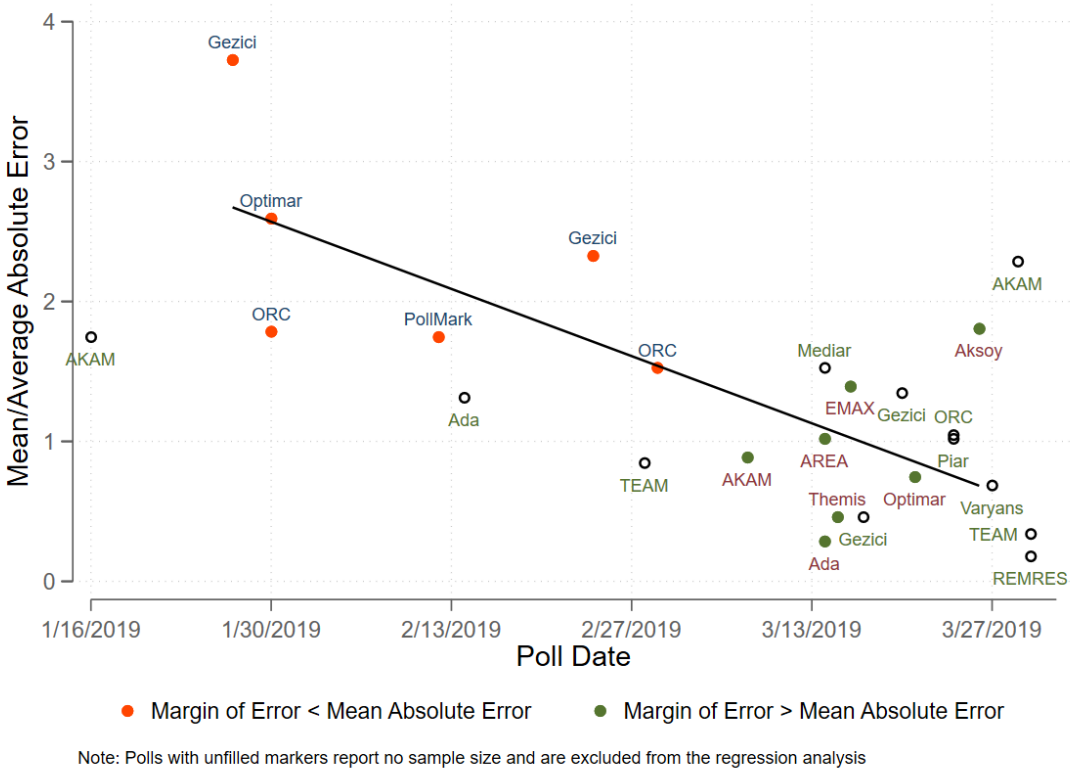
In Ankara, Millet İttifakı/CHP candidate Mansur Yavaş received 50.93% of valid votes. Cumhur İttifakı/AK Party candidate Mehmet Özhaseki could receive 48.60%. The total vote share of other party and independent candidates was 1.95%. The average absolute error is thus calculated as follows:

$$\text{AME}_{\text{March 2019}} = (|\text{Ö}zhaseki - \text{Ö}zhaseki_{\hat{\text{Özhaseki}}}| + |Yavaş - Yavaş_{\hat{\text{Yavaş}}}| + |Other - Other_{\hat{\text{Other}}}|)/3$$

Moreover, it is important to highlight that İstanbul and Ankara had long been governed by conservative parties –i.e., AK Party's predecessor Refah Partisi (Welfare Party, RP) since 1994 and by AK Party since the 2004 mayoral elections. Therefore, the observed outcomes could have been more unpredictable for pollsters especially for those who did not follow solid methodological surveys and post-survey adjustment practices.

Figure 3.17 shows the average absolute errors of the polls for the March 2019 İstanbul Mayoral Elections. As the negative slope indicates, absolute errors declined as the election day got close. Although six polls had larger absolute error than the margin of error at 95% confidence level, the average absolute error is 1.32, and the highest absolute error is 3.73 –from a poll conducted by Gezici 63 days before the election date. Seven polls had smaller absolute errors than their calculated margins of error, and all were conducted in the last month of the election campaign. However, it is important to remember that the difference between the two candidates was only 0.17%, which is smaller than the margins of error in all polls. For instance, Yıldırım's vote would be between 46.60% and 50.60%; and İmamoğlu's vote would be between 46.77% and 50.77% for ±2% margin of error. Since the estimates overlap, predicting the winner has the same odds as tossing a coin.

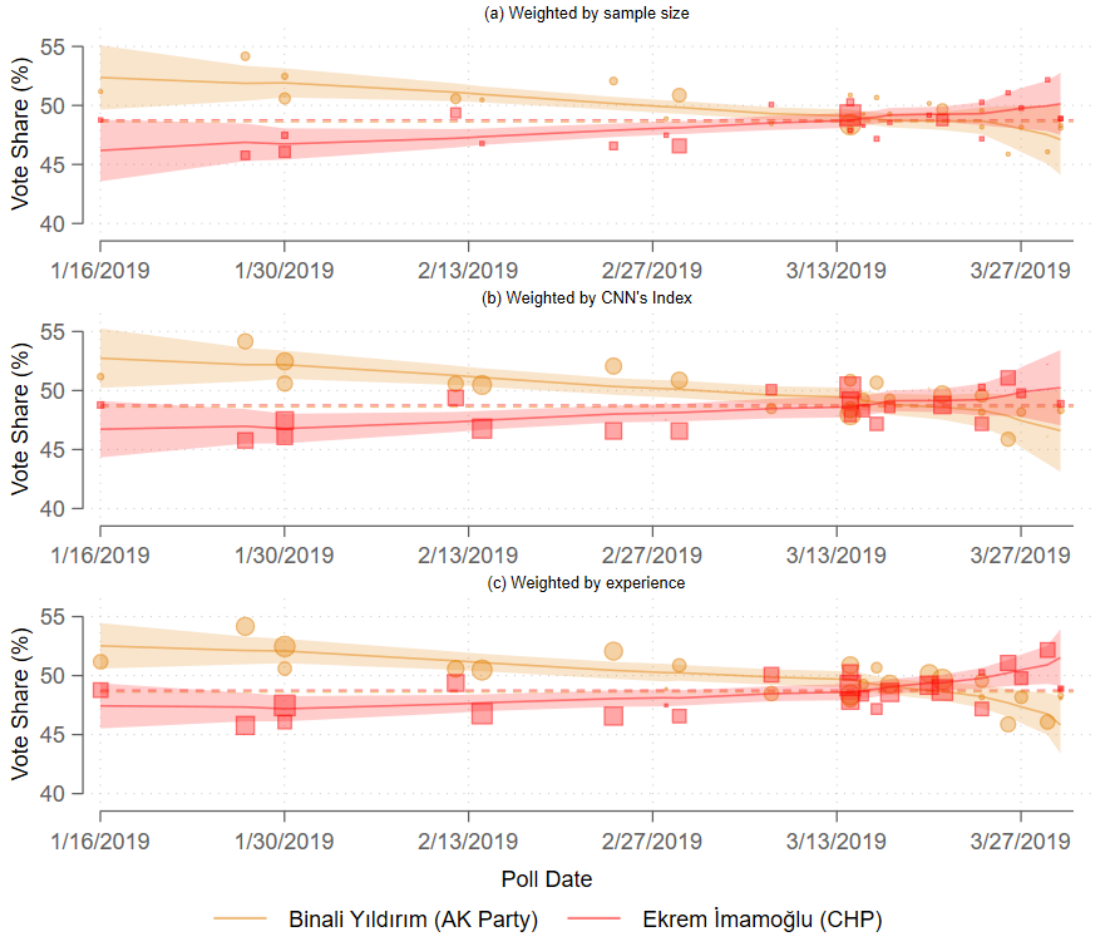
Figure 3.17 Mean/Average Absolute Error of Polls for the March 31 İstanbul Mayoral Elections



Figures 3.18 plot the polling estimates of the vote shares of the two candidates. Figure 3.18.a plots weighted estimates by sample size, Figure 3.18.b plots weighted estimates by CNN Index, Figure 3.18.c plots weighted estimates by firm experience. In all three plots, the confidence intervals around the average vote share estimates include the two mayoral candidates' observed vote shares. As all three plots indicate, many polls were within the calculated confidence intervals, and only some were largely inaccurate in their estimates. Moreover, the plots show that İmamoğlu's vote shares have increased rapidly in the last two weeks of the election. We may thus speculate that İmamoğlu's election campaign might have attracted non-partisan voters and late deciders (Kuru 2019; Tokyay 2019).

There are some distinctions between the three polls of polls. First, the confidence intervals in the estimates weighted by firm experience are narrower. Second, the estimates weighted by firm experience are the most successful in forecasting the candidates' vote shares. The estimates weighted by the CNN Index are the least accurate model in forecasting. This inaccuracy could be due to poor practices of polls for this election. The highest poll grade is 20 over 37, and the average grade is 11.88.

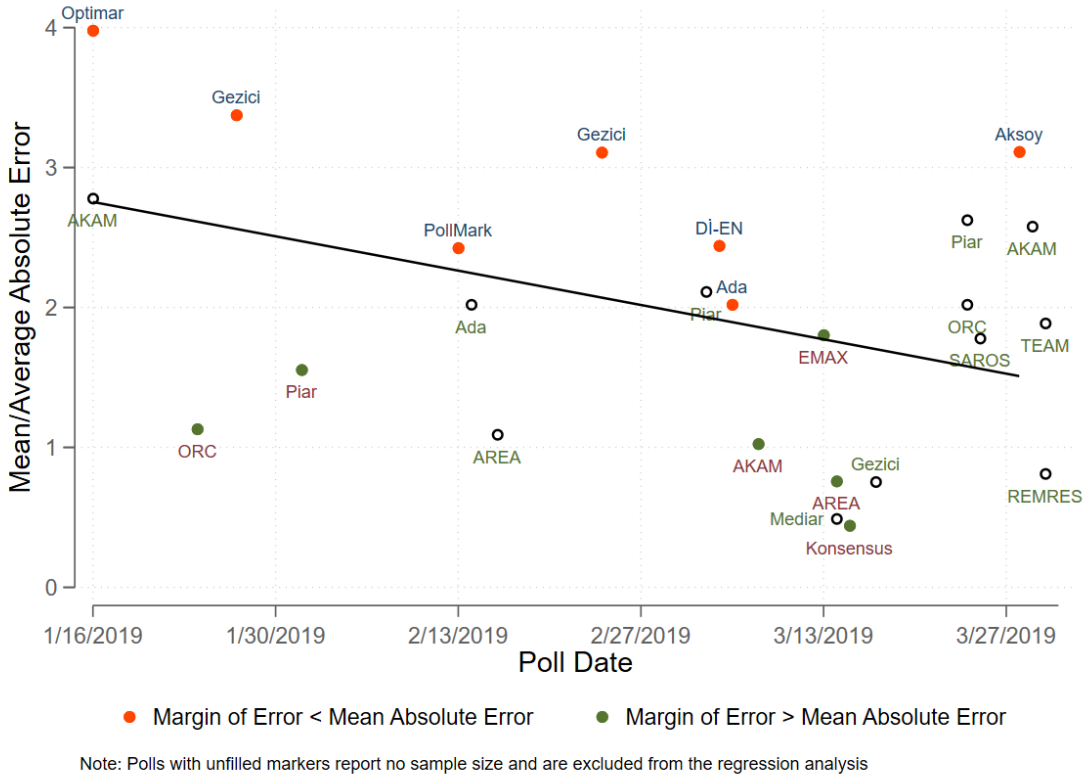
Figure 3.18 Polling Estimates of Candidate Vote Shares for the March 31 İstanbul Mayoral Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

Figure 3.19 presents the average absolute errors of the polls for March 2019 Ankara Mayoral Elections. Based on the reported sample sizes, seven polls have average errors greater than the estimated margin of error at 95% confidence level, and six polls have smaller average errors than the margin of error. 12 polls with unreported sample size are excluded from the regression analysis. In contrast to polls conducted for İstanbul, some polls have smaller absolute error than the margin of error conducted in the early election campaign. However, the average absolute error is higher, 1.93 among the 25 polls. The highest absolute error is 3.98 –from a poll conducted by Optimar 74 days before the election date. The average pollster experience is 13.20 years for this election.

Figure 3.19 Mean/Average Absolute Error of Polls for the March 31 Ankara Mayoral Elections



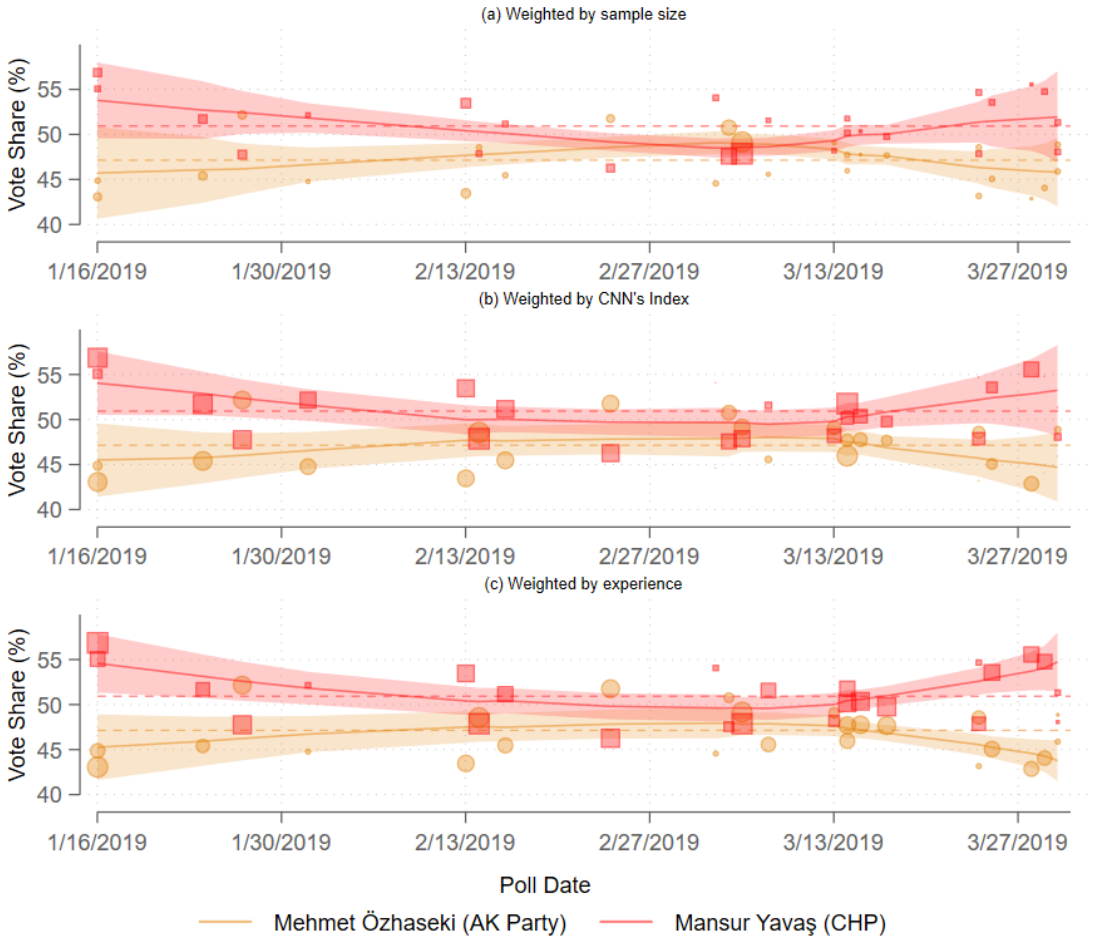
Figures 3.20 plot the polling estimates of the vote shares of Özhaseki and Yavaş. Figure 3.20.a plots weighted estimates by sample size, Figure 3.20.b plots weighted estimates by CNN Index, Figure 3.20.c plots weighted estimates by firm experience. As all three plots show the confidence intervals around the average vote share estimates include the observed vote shares of the two mayoral candidates. Although many polls were within the calculated confidence intervals, some were inaccurate in their estimates. These polls had overestimated Özhaseki's vote share and underestimated Yavaş's.

Moreover, plots indicate the change in support for candidates. Support for Yavaş decreases until mid-March and then increases again. In contrast, support for Özhaseki increases until mid-March and then decreases. Changes in the preferences might indicate that the election campaign influenced voters, and partisanship drove voter preferences less in this election.

There are a range of differences between the three groups of estimates. First, the confidence intervals in the estimates weighted by firm experience are narrower and wider in the CNN index estimates. Second, the estimates weighted by firm experience are the most successful in forecasting the candidates' vote shares. Similar to

İstanbul election, the estimates weighted by the CNN Index are the least accurate in forecasting. Indeed, the average grade is 11.24, that shows the low reporting transparency among the examined polls.

Figure 3.20 Polling Estimates of Candidate Vote Shares for the March 31 Ankara Mayoral Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.3.8 Pre-election Polls for the June 23, 2019, İstanbul Mayoral Elections

YSK has annulled the 2019 March İstanbul Mayoral Election and announced a re-run on May 6, 2019. The candidates of many opposition parties and independent candidates competing in the earlier elections held on March 31, 2019 have withdrawn from the re-election in favor of Ekrem İmamoğlu.

The vote difference between Millet İttifakı/CHP candidate Ekrem İmamoğlu and

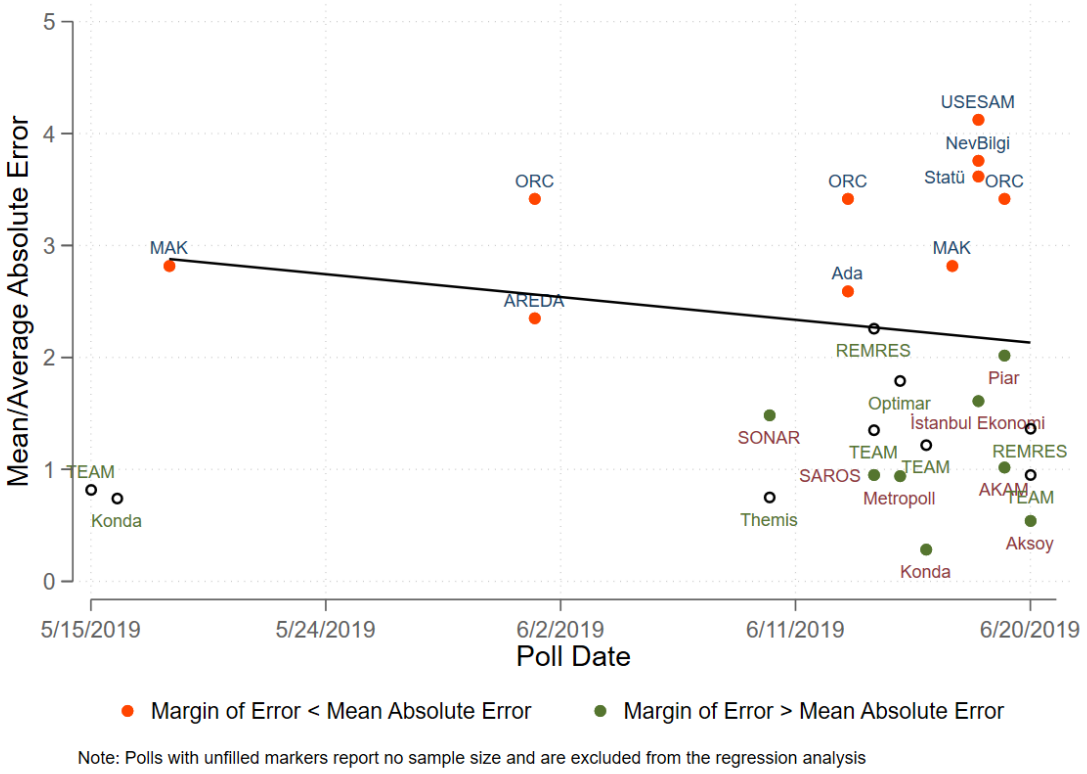
Millet İttifakı/AK Party candidate Binali Yıldırım has increased from 13.963 to 806.014. Because the total vote shares of other parties, and independent candidates are 0.78% of the total votes, hence below the average margin of error, the average absolute is calculated as follows:

$$\text{AME}_{\text{June 2019}} = (|Yıldırım - Yıldırım_{\hat{\text{Yıldırım}}}| + |\text{İ}mamoğlu - \text{İ}mamoğlu_{\hat{\text{İmamoğlu}}}| + |Other - Other_{\hat{\text{Other}}}|)/3$$

Figure 3.21 presents the average absolute errors of the polls for the June 23 İstanbul Mayoral Elections. Based on the reported sample sizes, 10 polls had average errors greater than the estimated margin of error at 95% confidence level, and eight polls had smaller average errors than the margin of error. Nine polls with unreported sample size are excluded from the regression analysis. In fact, all examined polls with higher absolute errors had overestimated vote shares for Yıldırım and underestimated İmamoğlu. The average absolute error is 1.94 among the 27 polls. The highest absolute error is 4.12 –from a poll conducted by USESAM five days before the election date. The pollster experience is the lowest with 10.89 years among the examined polls.

As can be seen from Figure 3.21, the average absolute error decreases as the election date approaches. Also, all polls that had smaller average errors than the margin of error at 95% confidence level were conducted in the last 10 days of the election campaign.

Figure 3.21 Mean/Average Absolute Error of Polls for the June 23 İstanbul Mayoral Elections



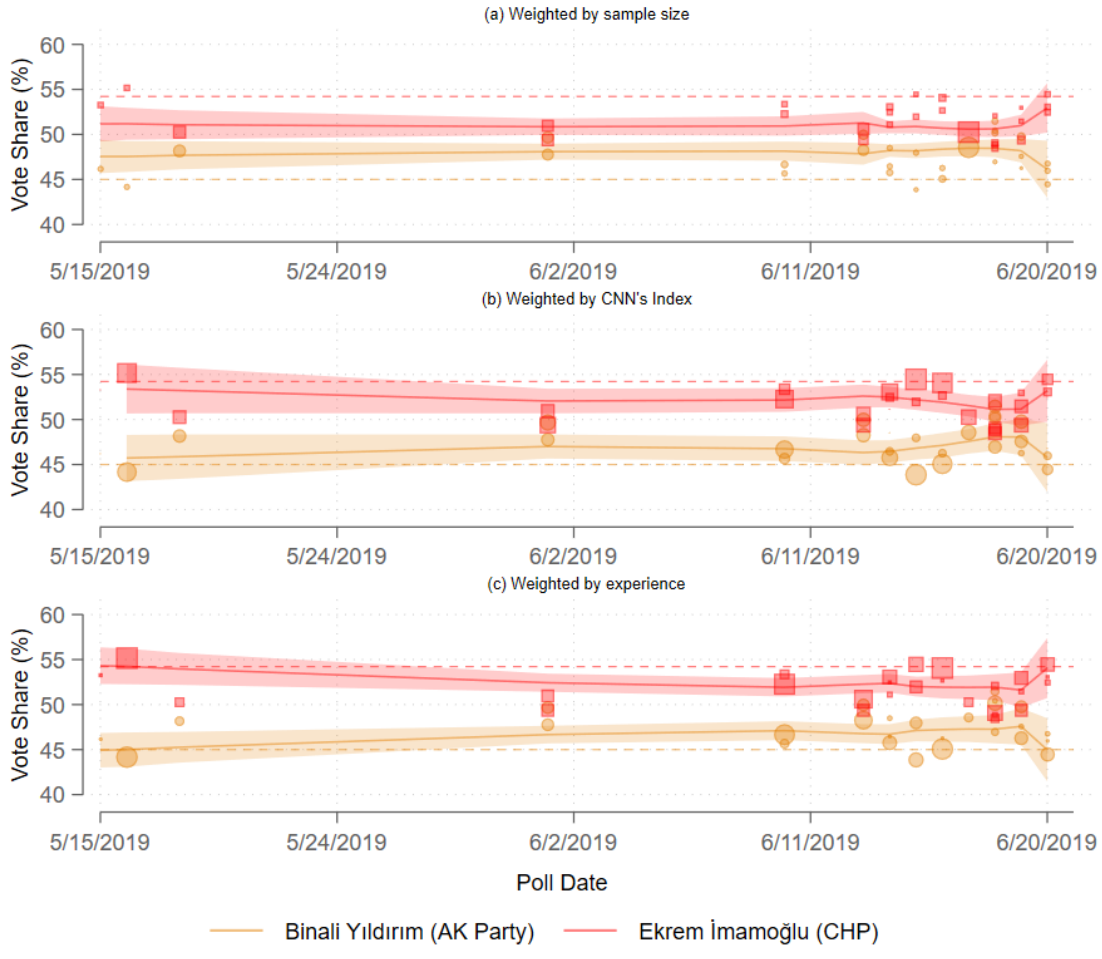
Figures 3.22 plot the polling estimates of the vote shares of the two candidates. Figure 3.22.a plots weighted estimates by sample size, Figure 3.22.b plots weighted estimates by CNN Index, and Figure 3.22.c plots weighted estimates by firm experience. In all three plots, the confidence intervals around the average vote share estimates include the two electoral candidates' observed vote shares.

Although polls of polls prove to be a successful forecasting tool, individual markers in Figures 3.22.a-3.22.c also demonstrate that many individual polls were inaccurate in their estimates, which might suggest that pollsters have missed voters without strong partisan attachments and affected positively by İmamoğlu's inclusive attitudes and rhetoric. Moreover, the curves show that İmamoğlu's vote shares have increased rapidly in the last week of the election campaign between the two elections. This increase also provides support to İmamoğlu's influence on non-partisans or undecided voters, as in the previous election (Konda 2019*a*; Taymaz 2019). Moreover, İmamoğlu was able to get votes from HDP supporters (Erdoğan et al. 2019).

There are, however, some differences between the three polls of polls in Figures 3.22.a-3.22.c. The first one is about the confidence intervals, which are much wider in the estimate weighted by the CNN Index. That is because there is more vari-

ance between neighbors, according to the Index score. The second difference is that support for candidates is more stable when we weigh individual polls by their respective sample sizes. This could be explained by that polls were similar in their sample sizes, especially at the beginning of the campaign, where the goal is usually to take a snapshot of the vote intentions among those who make their minds earlier. In Figure 3.22.b, İmamoğlu's vote share decreases while Yıldırım's vote share increases until June 1. In Figure 3.22.c, however, İmamoğlu's vote share decreases while Yıldırım's vote share increases until June 10. Lastly, although all different weighting methods are successful at forecasting the two candidates' vote shares, the firm experience is the most successful among the three, but the estimates weighted by CNN Index are the most successful in forecasting İmamoğlu's vote shares.

Figure 3.22 Polling Estimates of Candidate Vote Shares for the June 23 İstanbul Mayoral Elections



Notes: Markers indicate individual polls. Dashed lines show observed election outcome and solid lines show mean symmetric nearest neighbour smoothing estimates with confidence intervals at 95% level.

3.4 Conclusion

In the last decade, Turkish voters have gone to the polls for four general, two presidential, two mayoral elections, and two referenda. The average number of pre-election polls conducted during an election campaign has also grown with the increasing volume of elections and advancements in survey methodology and technology. Public opinion polls have often been blamed for the inaccuracy of their estimates. However, the analyses in this chapter show that pooling the polls together produces more accurate estimates of election outcomes even though many individual polls are inaccurate in their estimates.

A poll of polls tends to produce more precise estimates for election outcomes as a result of the increased sample size and that errors (or biases) in opposite directions cancel each other out. We used sample size, the revised CNN Index score explained in detail in the previous chapter, and firm experience as our analytical weights for our analyses. Table 3.3 shows the (average) average absolute errors of the estimates weighted using those weighted. On average, the CNN Index and firm experience are the most successful methods in forecasting the election outcomes. Because the difference between the two methods is not dramatic, however, the optimum weighting method to be used in polls of polls in the future should be subject to further research. The effects of the each weighting variable and other variables including controls and election fixed effects on absolute error are presented in Table A.4 of the appendix.

The estimates were more accurate for the 2011 General Elections, 2019 İstanbul Mayoral Elections, and 2019 Ankara Mayoral Elections. Interestingly, many experienced firms have not published their research for the 2019 Mayoral Elections. Indeed, pollster experience does not mean that scientific methods were employed in survey design and fieldwork, as shown in Chapter two. The estimates for 2014 Ankara Mayoral Elections, 2018 Presidential Elections, and 2015 November General Elections show the poorest performance. In 2014, Yavaş's support was heavily underestimated, in 2018 it was İnce, and in 2014 the estimates for all parties but for CHP were off the mark.

In sum, an examination of individual polls and polling practices in 11 mayoral, general, and presidential electoral contests demonstrate that survey design, sampling, and reporting practices in the pre-election polls do not follow internationally recognized scientific standards, and many polls have greater errors than their reported margins of error. However, pooling the polls together provides a useful forecasting

Table 3.3 The Average Absolute Errors of Weighted Estimates for Each Election

Election	Election Type	Sample Size	CNN Index	Experience	N
12/06/2011	General	1.12	0.96	1.20	26
30/03/2014	İstanbul Mayoral	4.95	5.03	5.28	23
30/03/2014	Ankara Mayoral	1.70	1.67	1.50	19
10/08/2014	Presidential	2.08	1.65	1.78	32
07/06/2015	General	1.57	1.53	1.49	68
01/11/2015	General	2.73	2.77	2.82	41
24/06/2018	General	2.46	2.27	2.04	46
24/06/2018	Presidential	3.64	3.48	3.23	42
31/03/2019	İstanbul Mayoral	0.86	0.86	1.03	25
31/03/2019	Ankara Mayoral	0.95	1.07	1.20	25
23/06/2019	İstanbul Mayoral	2.19	1.64	1.37	27
	Average	2.20	2.09	2.09	

High Low

tool for the election outcomes and help us track the support for political parties and candidates over the course of election campaigns.

4. CONCLUSION

> "We need to stop, and admit it: we have a prediction problem. We love to predict things -and we aren't very good at it" (Silver 2012, 17).

This research aims to better understand how successful pollsters report pre-election polls and produce estimates of parties' and candidates' electoral support in Turkey. Following a brief introduction, the answers to those questions are presented in two empirical chapters.

Chapter two provides the previous research on poll accuracy and the Total Survey Error paradigm. After explaining a total of 16 questions in CNN's Transparency Index and its usefulness as a survey quality assessment tool, it presents survey reporting practices in Turkey. Chapter two also presents the poll and pollster grades for a total of 374 polls conducted between 2011 and 2019 and based on the questions in the revised CNN Index.

The quality of surveys varies depending on various design and implementation procedures. The 'Total Survey Error' framework can provide guidance to scholars and practitioners to minimize survey errors and maximize data quality within fixed constraints. Although there are many typologies available for the framework, Groves's (Groves et al. 2009, 49-60) typology is perhaps the most used in previous literature. It suggests two major categories of survey error: observational and non-observational. Observational errors correspond to the measurement dimension and include construct validity, measurement error, and processing error. Non-observational errors are related to the representation dimension and include coverage, sampling, and non-response errors. This research employs a revised version of the CNN's Transparency Index for evaluating pre-election polls in Turkey as it offers a detailed understanding of the survey methodology and is based on the Total Survey Error paradigm.

As discussed in Chapter two, pollsters usually do not disclose sufficient information

regarding how polls were conducted. The most widely reported survey methodologic details are poll date, sample size, and survey mode. Other questions contain missing information for more than 50% of the time. Essential information about, for instance, sampling frame, sampling method, target population, post-survey adjustments are the least disclosed items. In comparison to the general and presidential elections, pollster reporting is less transparent in the examined mayoral elections. One of the most important reasons for pollsters' limited disclosure in the mayoral elections is that they tend to report generic information when they conduct polls in multiple cities. However, this practice of incorrect reporting is often misleading and useless since it restrains the public's ability to evaluate polls. Unfortunately, inaccurate reporting and a lack of attention to internationally recognized scientific principles are not limited to the mayoral elections. Several pollsters tend to misuse the terms random sampling, margin of error, and sampling frame in multiple polls.

Because reporting necessary information is rare, poll and pollster grades reflect so. The average poll grade is 14.03 over 37 points, which varies between 5 and 29. Although some pollsters tend to have higher grades, the variance of their different polls is high, indicating that even more successful pollsters do not report their polls systematically. In contrast to low grades in reporting, many pollsters have several years of experience in the field of public opinion polling. The average years of experience is 13 and it ranges between 1 and 34 among the 52 pollsters examined in this study. Although experience does not guarantee transparent reporting, the least experienced pollsters typically have lower grades.

After showing poor reporting practices in Turkey in Chapter two, Chapter three seeks to answer how pooling the polls together strengthens electoral forecasts. Following a brief introduction on the data collection and research methodology, chapter three presents the poll of polls for each election. For data compilation, I relied on an extensive list of online newspapers, pollsters' official websites and Twitter accounts, and web archives for the out-of-date content. The key inclusion criteria for pre-election polls were that polls should be released after the election's official announcement, should report major parties' or candidates' vote shares, and polling estimates should be available in multiple resources and consistent with each other. The novel dataset I compiled includes all the necessary information discussed in the revised CNN Index. For data analysis, I employed the nearest neighbor estimation method that smoothens the curve (i.e., trend) through time. A least-squared fit is used for such purpose –i.e., for calculating the smoothed values given the neighboring data points. Moreover, this model allows for using additional analytical weights independent of the weights of the nearest neighbors.

As shown in chapter three, the mean absolute error of several polls is generally higher than the estimated margin of error based on sample size at 95% confidence level. The analyses show that pooling the polls together, however, leads to more accurate estimates for election outcomes even though many individual polls are inaccurate in their estimates. The only exception is the November 2015 General Elections, in which almost all polls were significantly out of the mark. Three weighting methods are used in the poll of polls: 1) weighting by sample size 2) weighting by the revised CNN Index score 3) weighting by firm experience. Although the differences across these three methods were not severe, on average, the CNN Index and firm experience are the most successful methods in forecasting the election outcomes. Because sample sizes are usually large in Turkey, with an average of 4482, sample size does not turn out to be an important determinant of poll quality.

Put briefly, reporting practices as well as designs of the pre-election polls do not follow scientific standards in the examined cases, and many polls have larger errors than their calculated margins of error (assuming random sampling). However, pooling the polls together provides a useful forecasting tool for election outcomes in Turkey, similarly to other countries (Erikson and Wlezien 2012). There are three possible main explanations for the effectiveness of poll aggregation. First, polls measure attitudes and behaviors at a specific time. Therefore, day-to-day changes and the election campaign's effect on those are hard to track in individual polls (Pasek 2015). Second, poll aggregation may reduce peculiar errors in separate polls by cancelling those out (Jackson 2015). Third, increased sample size decreases the margin of error in poll-level polls of polls (Hillygus 2011).

Although the poll of polls is a useful tool in forecasting electoral outcomes, internationally recognized principles and procedures of survey methodology are not of lesser importance. Indeed, the quality of poll aggregation depends on the quality of individual polls. As high absolute errors in the examined polls show that the errors are not just the result of non-scientific and often convenience sampling practices in Turkey. To allow the public and researchers to evaluate the source of errors, pollsters should disclose clear and detailed methodology reports for each poll they publish. Although students of survey methodology frequently stress the importance of transparency and gold-standards for conducting scientific surveys, many pollsters do not take these suggestions into account. Indeed, pollsters have often been blamed for their estimates' inaccuracy by the public, media, and politicians. However, these accusations have not evolved into a demand for methodological transparency or employment of scientific principles in designing, conducting, and analyzing polls. Lack of demand by the public and that of any standards to publish polls by media organizations have allowed the pollsters to continue their wrong practices. However, to

understand the sources of errors and determine data quality, it is necessary to disclose several decisions and practices in designing, conducting, and analyzing public opinion polls.

To sum up, in this thesis, I seek to contribute to the Turkish politics literature by taking a closer look at the reporting practices of all publicly available pre-election polls in Turkey for all elections between 2011 and 2019. To the best of my knowledge, no previous study focuses on pollsters' reporting practices in Turkey. Moreover, I have graded polls based on the 16 questions in the revised CNN Transparency Index and used a poll of polls given that it is a better way to forecast elections than to rely on individual polls, even though many individual polls are inaccurate in their estimates of party or candidate vote shares. Taken together, these findings have important implications for both pollsters and media outlets. Pollsters should follow scientific standards more closely by paying attention to scientific principles and procedures, and gold-standards in survey methodology or consult scholars while designing and conducting public opinion polls. Both pollsters and media outlets should clearly outline the critical methodological aspects of the polls they conduct or report. Otherwise, horse-race reporting undermines the scientific nature of survey research and decreases the credibility of pre-election polls and pollsters. Furthermore, citizens selectively receive information in line with their pre-existing attitudes (Jonas, Schulz-Hardt, and Frey 2005; Lazarsfeld, Berelson, and Gaudet 1948; Sears and Freedman 1967; Stroud 2006). Previous literature shows that exposure to consonant political ideas increases turnout and strengthens pre-existing political attitudes (Knobloch-Westerwick et al. 2015; Mutz 2002). Therefore, selective exposure to ideologically congruent media outlets could increase pre-election polls' potential impact on political behavior. More strikingly, media outlets are polarized ideologically in Turkey (Yıldırım, Baruh, and Çarkoğlu 2020). Politically-motivated media outlets presumably publish poll estimates that are in line with their political interest. Consequently, the effect of polls could be more significant in a polarized environment, especially when polls are presented without necessary details for evaluation.

Despite its many contributions and implications, this study is not without limitations. The most major of those are related to data collection. First, perhaps the most serious of those was regarding the failure to obtain all polls because some research reports are not available at the moment. This incompleteness was a source of disappointment because it led to the omission of some polls, and hurt the comparison and evaluation of more numerous polls. Second, the findings of this thesis are restricted to the disclosed information by pollsters. Moreover, the claims of pollsters were accepted as accurate. However, pollsters can intentionally conceal necessary information to avoid criticisms. For instance, reporting political spon-

sors is very frequent, but the missing information rate for this criterion is too high. Third, assessing inter-coder reliability was not possible since I was the only coder of the study. Fourth, it should be noted that this thesis employs only a subset of pre-election polls. As media outlets and pollsters have private economic and political interests, the sample is not free of bias. Therefore, it may be showing what a group of pollsters and media choose to publish from among what pollsters conduct. Indeed, some scholars argue that polls cannot provide a neutral representation of the public but present an aggregation of individually expressed responses create an illusion of public opinion used to legitimize political actions (Bourdieu 1979).

In addition to data collection, there are some other limitations concerning measurement. Since there is no previous study grading polling practices in Turkey, I revised the CNN Index based on the Total Survey Error paradigm. To assess the reliability of the grading scale, I graded a recent ISPP survey. However, developing a country-specific survey assessment tool paying more attention to the peculiarities of survey practices in Turkey would be more useful. Last, I used sample size, CNN Index score, and firm experience as the three analytical weights. Although those weighting methods worked well, the optimum weighting method should be subject to further research and possibly be a combination of those. Developing a survey assessment tool for Turkey and finding out the optimum weighting method would be a promising area for further research.

Indeed, no survey is perfect as all surveys are prone to some level of uncertainty depending on the decisions of pollsters or survey researchers. As Rosenblueth and Wiener (1945, 320) note:

> "The best material model of a cat is another, or preferably the same cat."

At best, polls reflect the ideas of a group of people representing the target population at a given time. As such, they cannot fully represent the population on the day of the election. However, uncertainty can be minimized by following and adopting internationally recognized scientific standards of survey research.

Undertaking this thesis has been a challenging but worthwhile learning experience. I have gained some understanding of the nature of survey research. Most importantly, I have learned that there is a cost for every decision made and there are foreseeable and avoidable trade-offs at every stage of a survey. Indeed, I have gained much more experience in survey research by reading and studying than working as a researcher

in a survey company. Moreover, this thesis has provided me with ethical guidelines that I will follow in my future academic and business life. I intend to continue studying survey methodology since I now have a growing awareness of inadequate survey research practices in Turkey and elsewhere.

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APPENDIX A

Appendices

Table A.1 The Numbers of Polls and Pollsters by Elections

	2011	2014		2015		2018		2019	**Total**
Pollsters	Gen.	May.	Pres.	Jun.	Nov.	Gen.	Pres.	May.	
A&G	2	2	1	2	1	1	1	0	**10**
Ada	0	0	0	1	1	1	1	5	**9**
Ajans Press	0	0	1	0	0	0	0	0	**1**
AKAM	1	0	0	4	2	2	2	7	**18**
Aksoy	0	0	0	1	0	0	0	3	**4**
ANAR	1	1	1	1	0	0	0	0	**4**
Andy-AR	3	2	2	3	2	0	0	0	**12**
Anka	0	0	0	0	0	1	0	0	**1**
AREA	0	0	0	0	0	0	0	3	**3**
AREDA	0	0	0	0	0	0	0	1	**1**
Argetus	0	0	0	1	1	2	2	0	**6**
Benenson	0	0	0	1	0	0	0	0	**1**
Betimar	0	0	0	0	1	1	1	0	**3**
Denge	0	0	1	3	1	0	0	0	**5**
DESAV	0	0	1	0	0	0	0	0	**1**
Dİ-EN	0	0	0	0	0	0	0	1	**1**
EMAX	0	0	0	1	0	0	0	2	**3**
Foresight	0	0	0	0	0	1	1	0	**2**
GENAR	2	4	2	6	2	1	1	0	**18**
Gezici	0	9	3	7	5	2	3	7	**36**
İKSara	3	0	0	0	0	0	0	0	**3**
İstanbul Ekonomi	0	0	0	0	0	4	0	1	**5**
İVEM	0	1	0	0	1	0	0	0	**2**
KamuAR	0	0	0	3	2	0	0	0	**5**
Konda	4	0	2	2	4	2	2	2	**18**
Konsensus	2	2	1	1	2	2	2	1	**13**
LRC	0	0	1	0	1	0	0	0	**2**
MAK	0	6	2	5	2	2	2	2	**21**

Marmara	1	0	0	0	0	0	0	0	**1**
Mediar	0	0	0	0	0	3	4	2	**9**
Metropoll	3	0	3	7	3	2	3	1	**22**
Nev Bilgi	0	0	0	0	0	0	0	1	**1**
Optimar	0	2	1	0	1	2	1	4	**11**
ORC	2	8	3	7	2	2	2	8	**34**
Pananaliz	0	0	0	1	0	0	0	0	**1**
Paradigma	0	0	1	0	0	0	0	0	**1**
Perspektif	0	0	0	2	1	0	0	0	**3**
Piar	0	0	0	0	0	3	3	5	**11**
PlusMayak	0	0	0	0	0	1	1	0	**2**
Politic's	0	0	0	1	0	0	1	0	**2**
PollMark	1	1	1	1	1	0	0	2	**7**
REMRES	0	0	0	0	0	5	5	4	**14**
SAMER	0	0	0	1	1	0	0	0	**2**
SAROS	0	0	0	0	0	1	1	2	**4**
SONAR	1	4	2	4	2	2	2	1	**18**
Statü	0	0	0	0	0	0	0	1	**1**
TEAM	0	0	0	0	0	0	0	7	**7**
Themis	0	0	0	0	0	0	0	2	**2**
TÜSİAR	0	0	3	1	1	1	1	0	**7**
USESAM	0	0	0	0	0	0	0	1	**1**
Varyans	0	0	0	0	1	0	0	1	**2**
Vera	0	0	0	1	0	1	1	0	**3**

High Low

Table A.2 Scoring Criteria on the Revised CNN's Transparency Index

Items	Score	Criteria
Pollster	0	10 years or less experience
	1	More than 10 years of experience
	0	Not a member of a transparency initiative
	1	Member of a transparency initiative
	0	Previous performance is not within top 20
	1	Previous performance is within top 20
Survey Mode	0	CATI, mixed, web survey
	1	Unreported
	2	Face-to-face
	3	Face-to-face in households
Sponsor	0	Political party, candidate
	1	Unreported
	2	Other sources (newspapers, NGOs)
	3	Pollster's own financial sources
Sample Size	0	1000 or less
	1	1000-1500, range (e.g., between 2400 and 3000), or unreported
	2	1500-2400
	3	2400 or more
Language	1	Unreported
Survey Questions	0	Unusual wording (e.g., will you vote for party X?)
	1	Unreported

	2	Intended vote
	3	Multiple questions
Survey Date	0	Unreported
	1	Without sufficient detail (e.g., in June)
	2	Without sufficient detail (e.g., end of June)
	3	Sufficiently detailed (e.g., between June 3, 2019 and June 6, 2019)
Sampling Method & Frame	0	Non-probabilistic or unreported
	1	Defined sampling frame, no sampling method
	2	Probabilistic, no information on the sampling frame
	3	Probabilistic, defined sampling frame
Quota Variables	0	Quota sampling
	1	Unreported
	2	Quotas used in within household selection of respondents, addresses selected randomly
	3	Probabilistic sample
Target Population & Representation	0	Unreported
	1	TP missing, defined source (missing mode) or TP is defined (non-F2F)
	2	TP missing, defined source (F2F) or both defined (missing mode)
	3	Defined TP and sampling source (F2F)
Cellphone Rate	0	Unreported
	1	Only rates or numbers of mobile and landline phones
	2	Rates or numbers from multiple operators and landline phones
	3	Rates or numbers from all operators and landline phones

Callbacks	1	Unreported
Verification	1	Unreported
Survey Error	0	Misused
	1	Reported, missing sampling method
	2	Probabilistic, margin of error is more than 2 points
	3	Probabilistic, margin of error is less than or equal to 2 points
Weighting	0	Unreported
	1	Weighted without explanation
	2	Weighted with insufficient detail (e.g., demographic variables are used)
	3	Weighted with sufficient detail
Minimum Subset Size	1	Unreported

Table A.3 Grades of Pollsters with Polls for at Least Three Elections

	2011	2014		2015		2018		2019	
Pollsters	Gen.	May.	Pres.	Jun.	Nov.	Gen.	Pres.	May.	Avg.
A&G	8.00	15.00	12.00	12.00	18.00	17.00	17.00		13.40
Ada				16.00	14.00	23.00	23.00	15.80	17.22
AKAM	8.00			13.25	11.00	8.50	8.50	7.86	9.56
ANAR	8.00	15.00	13.00	8.00					11.00
Andy-AR	13.67	15.00	14.50	13.00	12.00				13.58
Argetus				13.00	11.00	14.00	14.00		13.33
Betimar					14.00	12.00	12.00		12.67
Denge			13.00	12.00	11.00				12.00
GENAR	22.00	12.75	20.00	13.00	14.50	13.00	13.00		14.89
Gezici		10.78	17.33	17.00	15.80	14.00	14.00	12.00	13.92
Konda	14.75		13.00	21.50	21.50	22.00	22.00	22.50	19.28
Konsensus	15.50	12.00	12.00	15.00	12.50	11.50	11.50	11.00	12.62
MAK		7.67	13.00	12.60	15.50	14.50	14.50	15.00	12.10
Mediar						15.75	16.67	10.50	14.89
Metropoll	12.33		22.67	23.57	28.67	27.50	21.33	25.00	22.73
Optimar		14.50	16.00		15.00	12.50	14.00	14.50	14.27
ORC	14.00	16.88	14.67	15.86	15.50	15.50	15.50	14.25	15.44
Piar						11.00	11.00	9.40	10.27
PollMark	11.00	13.00	13.00	14.00	12.00			14.00	13.00
REMRES						16.75	17.00	7.50	14.29
SAROS						8.00	8.00	13.50	10.75
SONAR	15.00	8.00	14.00	13.50	13.50	11.50	14.00	20.00	12.61
TÜSİAR			19.67	20.00	14.00	15.00	15.00		17.57
Vera				18.00		18.00	18.00		18.00

Table A.4 Absolute Error for the Last Reported Polls Before the Election Day

	Model.1	Model.2	Model.3	Model.4	Model.5
CNN score	-0.736*	-0.752*	-0.943**		
	(0.442)	(0.436)	(0.398)		
Experience	-0.319	-0.267	-0.309	0.983**	0.599
	(0.355)	(0.353)	(0.344)	(0.478)	(0.386)
Sample size	1.098*	0.965	1.165**	0.805	0.847
	(0.585)	(0.585)	(0.549)	(0.707)	(0.631)
Days until election		2.131***	2.085***	1.229**	1.390**
		(0.624)	(0.642)	(0.565)	(0.596)
Mayoral			0.394*	0.350*	
			(0.209)	(0.198)	
Presidential			-0.300	-0.165	
			(0.219)	(0.204)	

Field days	0.589	0.762
	(0.780)	(0.784)
Pollster	-1.599***	-1.311***
	(0.338)	(0.308)
Survey mode	0.029	0.201
	(0.377)	(0.380)
Sponsor	-0.271	-0.383
	(0.271)	(0.261)
Sample size	0.253	-0.158
	(0.449)	(0.488)
Survey questions	0.355	0.651**
	(0.307)	(0.319)
Sampling method	1.902***	1.356**
	(0.561)	(0.556)
Quota variables	-1.245*	-1.174**
	(0.654)	(0.549)
Target population	-0.735***	-0.663**
	(0.251)	(0.272)
Margin of error	-0.471	-0.309
	(0.462)	(0.449)
Weighting variables	0.261	0.495
	(0.506)	(0.489)
General (2011)		0.007
		(0.287)
İstanbul (2014)		0.288
		(0.366)
Ankara (2014)		1.557*
		(0.872)
Presidential (2014)		0.996**
		(0.388)
General (November 2015)		0.850***
		(0.307)
General (2018)		0.707**
		(0.347)
Presidential (2018)		0.661**
		(0.324)
İstanbul (2019)		-0.627**
		(0.288)

Ankara (2019)					0.092
					(0.382)
İstanbul (Repeat)					0.262
					(0.386)
Constant	2.440***	2.172***	2.269***	2.427***	2.057***
	(0.259)	(0.253)	(0.271)	(0.412)	(0.468)
N	200	200	200	200	200
R^2	0.032	0.100	0.138	0.258	0.378

Notes: Robust standard errors in parentheses.

* p<0.1, ** p<0.05, *** p<0.01