Are Polls Becoming Equal?

Dan Cassino, Krista Jenkins, Peter J. Woolley
Fairleigh Dickinson University's PublicMind, 285 Madison Ave., Madison, NJ 07940

Abstract

Using a data set of surveys conducted two weeks prior to the 2006 U.S. Senate races, we assess the accuracy of surveys conducted via telephone, the Internet, and through use of IVR technology, as well as those sponsored by universities, corporations, and partisan organizations. Our findings lead us to conclude that partisan surveys did not reflect the general election outcome as well as non-partisan surveys, Republican surveys were more biased than Democratic surveys, telephone surveys fared better than internet surveys, and conventional telephone surveys did not reflect the outcome better than IVR surveys.

Key Words: IVR technology, RDD, partisan polls, standards, survey accuracy, CATI polls

Reporting Standards and Poll Methods

Professional standards for survey reporting were developed in order to distinguish among sources of polling data and to bring to the fore those that were objective and used methods widely considered by journalists and academics to be most reliable.[1] But with the expansion of news reporting to the Web and, consequently, tens of thousands of news sites, partisan chat rooms and wide-ranging blogs, surveys are not necessarily passing through the same editorial gates they used to.

Indeed, even on the popular site Pollster.com, surveys done for candidates and partisan clients are regularly included along with non-partisan ones. All surveys are considered equal in constructing a trend line in electoral contests from local regression and, in fact, some may be given more weight if their results happen to be the most recent. Of course, below the trend line, Pollster.com always notes, for anyone wishing to cast a skeptical eye, each polling firm, its sample frame, number of cases, method of data collection, and interview dates.

Yet on other Web sites, and in some other media, surveys from partisan sources may be given significant importance depending on the partisanship or convenience of the publisher or broadcaster. Likewise, some TV and radio journalists are willing to echo claims of partisan spokespersons and campaign consultants based on a partial release of their data. And of course, those same partisans are likely to claim that their "internals" show something different and revelatory compared to the non-partisan polls.

Complicating matters further is the addition of surveys conducted through use of interactive voice recognition software (IVR). Using this method, respondents hear recorded messages rather than live interviewers. Surveys that use IVR technology have dramatically expanded in the past decade with their use increasing significantly in the past two presidential elections. Results of these "robo-polls," as they're often referred to, are widely reported by major TV news networks and remarked on by campaigns despite reservations voiced among some survey professionals, academic and otherwise. Blumenthal (2005) highlights the following potential problems with surveys conducted using IVR technology:

> Without a live interviewer, random selection of a respondent within a household is problematic, and as such, IVR pollsters typically interview whomever answer the phone, using weighting schemes to correct demographic bias. Detractors argue that as a result of either nonrandom within-household selection or response bias, IVR pollsters weight much more severely than other pollsters, thus increasing the standard error. Without a live interviewer, the IVR pollster has no way to check who is answering for the household. A 10 year old boy may claim to be a likely voter. Without a live interviewer, respondents cannot ask for clarification or repetition (660).

Yet, despite these limitations, IVR surveys have not been shown to be less accurate than those using other polling methods (AAPOR 2009; Bloom and Pearson 2005; Blumenthal and Franklin, 2007; Harrison 2009)

[1] See, e.g., Sheldon R. Gawiser and G. Evans Will, *A Journalist's Guide to Public Opinion Polls*, Preager, 1994, one of many resources exhorting users and publishers not to assume all polls are equal.

At the same time, the decline in telephone response rates and concern over the lack of coverage for cell phone-only households has pushed surveyors to develop alternatives to land-line interviews. A rapid expansion of non-telephone surveys and multi-mode methods has been made possible in part by the penetration of internet services to most American households.

Although there have been vigorous discussions of the credibility of specific survey results, such discussions are fleeting, cut off when the next series of results appear or the next election cycle begins.[2] Less in evidence is a continuing discussion over the ability of different methods and different sources to accurately reflect public preferences.

Thus, in an effort to assess survey accuracy across both methods and sources, we examined publicly reported polls in the last two weeks of the general campaigns for US Senate in 2006. Our hypotheses were as follows:

- Telephone polls that use CATI or IVR technology will be more accurate than internet based surveys;
- Telephone surveys conducted with CATI technology will be more accurate than those that use IVR technology.
- Partisan polls will not reflect the final outcome of the races as well as non-partisan polls (as measured by those sponsored by colleges and universities or for-profit and not-for-profit private entities)
- Partisan polls will exhibit systematic bias in favor of the sponsoring party.

The Data

In a generous and convenient offering, the Pollster.com Web site provided to all visitors after the 2006 general election an Excel file with information concerning virtually all aspects of each voter survey of a U.S. Senate race publically released that year, including the method of respondent selection, total number of respondents, manner in which the survey was conducted (IVR, phone, internet), estimates of Democratic and Republican support, margin or error, the end date of interviews, the polling organization, final election results, and a link to a press release or news report.

For purposes of this analysis, we selected all surveys concluded in the two weeks leading up to Election Day.[3] This yielded 192 cases across 21 states.[4] We coded each survey as partisan, university, or commercial. "Partisan" surveys were conducted on behalf of a political party, a candidate, or a party-related organization. More often than not, these are not released to the press and those that are included in this analysis are only those given to the press. "University" surveys were those whose sponsors were strictly academic; commercial surveys included those fielded by for-profit and not-for-profit organizations, including media organizations.[5] We also coded each survey by its mode of

[2] Mark Blumenthal (2005) provides a thorough overview of the controversies surrounding the use of new technologies in survey research.

[3] Fourteen days is an arbitrary cut-off. But it would be unreasonable to expect polls done too long before the election to be as close to a final result as those done in the final days of the campaigns. On the other hand, the N would be small indeed if we restricted the data only the polls released one or two days before the election.

[4] There were 34 races, but in a number of states with lopsided contests, no polling was made available in the final two weeks: Delaware, Hawaii, Indiana, Maine, Massachusetts, Mississippi, New Mexico, Nebraska, North Dakota, Nebraska, Utah, Vermont, Wyoming.

[5] A list of all field houses in each category is found in the appendix.

data collection: those conducted via the Internet, telephone (using a combination of a human interviewer and a computer-assisted telephone interviewing, or CATI, system), and telephone interviews using an interactive voice recognition (IVR) system.

Table 1 shows the range of average deviations between survey estimates and electoral results in each state by the field house type and mode of data collection. The final result is defined as the percentage vote share for the Democratic candidate minus the percentage vote share for the Republican.[6] Deviation is the difference between the final result and survey estimates of percentage support for the Democratic candidate minus percentage support for the Republican candidate. Each cell then shows the average deviation between the survey estimate spread of Republican and Democratic support and the final election result spread between Democratic and Republican candidates across various types of surveys.[7]

As can be seen in the bottom row, partisan surveys fared worst in accuracy (4.93) while the difference between university and commercial surveys was negligible (4.30 and 4.24 respectively).[8] As for the percentage of surveys that produced estimates with no deviation from election results, academic surveys came out on top (26%), followed by commercial (8%) and partisan (4%). The tendency among both academic and commercial surveys was to overestimate support for the winner (61% and 60% of the time, respectively) whereas partisan surveys tended to underestimate winner support (55%).

Also note the differences between Republican and Democratic polls. Democratic sponsored surveys yielded estimates that were closer to the electoral outcome than Republican sponsored surveys. The average deviation amongst Democratic surveys was 3.34 with a total N of 14; Republican surveys yielded estimates with an average deviation of 6.62 (N=13).

As for the mode of data collection, surveys utilizing CATI assisted telephone interviews and IVR telephone interviews fared the best in relative accuracy, with internet surveys coming in a distant third (4.02 and 3.75 versus 5.91, respectively).[9] CATI assisted phone surveys produced the greatest percentage of estimates that coincided exactly with electoral outcomes (11%), compared to six percent for IVR surveys and zero percent of internet surveys.

The trend among all methods of data collection was to overestimate the winner's ultimate margin of victory, with 61 percent of internet surveys, 51 percent of CATI assisted telephone surveys, and 54 percent of IVR surveys doing so.

States that presented the greatest difficulty to researchers (as measured by the incidence of deviations that exceeded the aggregate mean), regardless of type and mode

---

[6] We defined the results for both the pre-election surveys and the final outcome by the difference in percentage share between the two leading candidates rather than by the percentage share because this is a uniform way of looking at polls that in many respects differ widely, e.g. in how they ask the ballot question, how hard they push respondents who are initially undecided, how they screen voters and, most important, whether or how they allocate undecided votes.

[7] Connecticut was the only state with a highly competitive independent candidate. In this case, Senator Joe Lieberman, the independent, was considered as all Republican candidates were treated for purposes of this analysis, i.e. as the non-Democratic candidate.

[8] But removing the clear outlier, Wisconsin, from the aggregate measurement of corporate accuracy reduces the average to 4.04.

[9] Removing Wisconsin from the aggregate measure of internet deviations reduces the average to 5.20 from 5.91.

of data collection, were Maryland, Michigan, Minnesota, Pennsylvania, Rhode Island, Texas, and Washington.

Table 1: Average Deviations between Survey Estimates and Electoral Results Across Types of Surveys and Modes of Data Collection

State	Type of sponsor			Method		
	University	Partisan	Commercial	Phone	IVR	Internet
AZ	-	-	3.22 (5)	2.75 (2)	4.00 (1)	3.30 (2)
CA	-	-	4.25 (4)	2.00 (1)	3.50 (2)	8.00 (1)
CT	.50 (2)	-	3.42 (6)	1.00 (4)	1.00 (2)	7.75 (2)
FL	-	3.00 (3)	3.18 (5)	2.40 (5)	1.00 (1)	5.95 (2)
MA	3.5 (2)	-	2.00 (1)	3.50 (2)	-	2.00 (1)
MD	-	5.00 (2)	4.88 (11)	4.50 (6)	6.40 (5)	2.35 (2)
MI	-	7.00 (3)	4.29 (9)	4.38 (8)	7.50 (2)	4.80 (2)
MN	13.5 (2)	-	5.16 (8)	9.50 (4)	5.00 (4)	5.15 (2)
MO	-	.00 (1)	2.95 (15)	2.14 (7)	2.67 (6)	4.43 (3)
MT	-	4.50 (2)	2.50 (6)	3.60 (5)	2.00 (3)	-
NJ	2.83 (6)	3.20 (5)	3.25 (12)	3.00 (18)	4.67 (3)	2.00 (2)
NV	-	-	3.10 (5)	1.50 (2)	2.00 (1)	5.25 (2)
NY	2.00 (2)	-	11.70 (1)	2.00 (2)	-	11.70 (1)
OH	.00 (1)	-	5.33 (11)	3.50 (6)	3.00 (3)	8.30 (2)
PA	6.00 (5)	8.33 (3)	6.22 (5)	7.00 (10)	5.00 (1)	5.50 (2)
RI	4.00 (1)	-	6.00 (3)	5.50 (4)	-	-
TN	-	5.00 (5)	3.25 (12)	5.22 (9)	2.17 (6)	2.00 (2)
TX	-	-	6.40 (4)	8.50 (1)	.00 (1)	8.55 (2)
VA	4.00 (1)	3.00 (1)	2.65 (12)	2.29 (7)	3.80 (5)	1.90 (2)
WA	5.00 (1)	7.50 (2)	6.42 (5)	5.25 (4)	7.50 (2)	8.05 (2)
WI	-	-	17.90 (2)	-	-	17.90 (2)
All	4.30 (23)	4.93 (27)	4.24 (142)	4.02(107)	3.75 (48)	5.91 (36)

Note: Parentheses indicate the number of cases in each cell

Analyses

However suggestive these descriptive analyses are, a full test of our hypotheses required a multivariate analysis of the sources of the error and potential bias in the results of the various polls. Error is simply the difference between the estimated difference in vote share of the candidates (as assessed by each survey) and the actual difference in vote share that they receive in the election. This error is not necessarily in favor of one side or the other, and would include both sampling and non-sampling error. Bias is also a calculation of the difference between expected and actual vote share differentials, but it is directional: a category of polls would be said to be biased if that category systematically estimated a class of candidates to fare better or worse. There is no reason to conclude that this bias is intentional: it simply means that non-sampling error is running in a certain direction.

In the first analysis, we use the described data to model the *expected* amount of error in polls of the 2006 Senate elections, based on the modality of the poll (Internet, IVR or telephone), the sponsor of the poll (partisan, commercial or university, with the latter as the excluded baseline category), two indicators of the closeness of the election

(the absolute value of the actual difference in vote share between the candidates and the difference between the Democratic and Republican vote share), the party of the sponsor (in the event of a partisan poll), and various interactions of these variables. With this analysis, we are modeling the factors that may show certain types of surveys to be more or less accurate than others: the higher the value of the dependent variable, the farther away from the actual election outcome the vote share estimated by the poll was. Factors that lead to more accurate survey estimates should carry negative coefficients; those that lead to less accurate survey estimates should have positive coefficients. The same applies to interaction effects: it may be that partisan, IVR, or internet polls will be more, or less, accurate, depending on circumstances of the election, such as the closeness of the election and which party has the advantage.

Although the variable error might seem like an ideal candidate for simple OLS regression – it has a theoretically large range, would be expected to have a relatively normal distribution, and has a continuum of values – we have the problem of absolute left censoring of the data. That is, it is impossible for a poll to have less than zero error. If there were relatively few values near the zero point, this would not be an issue – but fully 22 percent of the polls in our sample had a total error of less than two points. As such, we make use of an ordered logit regression to estimate the effects of the various predictors on the likely error, using robust standard errors to account for the potential impact of outliers (two of the polls in the sample had error rates greater than three standard deviations away from the mean).

Diagnostics for this analysis are promising: the percentage of cases correctly predicted exceeds what would be expected by chance by 59 percent. In addition, all of the interaction effects – though few of the main effects – are significant at conventional levels.

Table 1: Ordered Logit Analysis of Error in Predictions

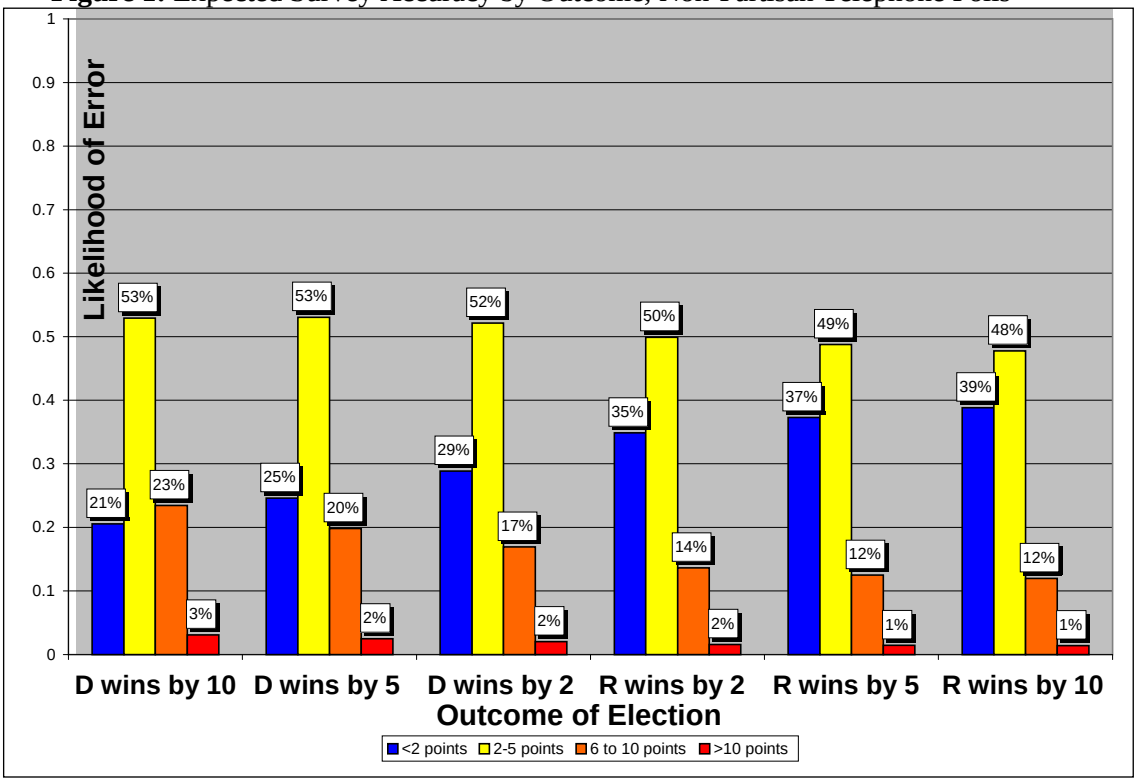
Predictor	Beta	Std. Error	z
Closeness of Election	0.015	0.035	0.4
Internet Poll?	-0.513	0.558	-0.9
IVR Poll?	0.339	0.352	1.0
Partisan Poll?	-1.006	0.996	-1.0
Corporate Poll?	-0.543	0.501	-1.1
Republican Poll?	**2.315**	**0.671**	**3.5**
Democratic Less Republican Outcome	**0.078**	**0.032**	**2.5**
Partisan x Closeness	**0.420**	**0.214**	**2.0**
Partisan x IVR	**-3.559**	**0.914**	**-3.9**
Closeness x DLRO	**-0.003**	**0.001**	**-2.5**
Partisan x DLRO	**-0.430**	**0.183**	**-2.4**
Internet Poll x Closeness	**0.124**	**0.036**	**3.5**

Bolded coefficients are significant at p<.05

These coefficients indicate several things about the sources of the error. First, most probably due to factors in the electoral environment, polls carried out by Republican groups were substantially worse in predicting outcomes than other polls, including those carried out by Democratic groups. With regards to the main effects, corporate, partisan and university polls were all equally accurate. In addition, the greater the Democratic margin in the final election, the greater the expected error in all of the analyses. However, this main effect is mitigated by two significant interactions: the overall closeness of the election, and whether the poll was carried out by a partisan polling group. The interaction

of the closeness of the election and partisan polling tells us that the more lopsided the election is, the worse the partisan polls do – if the election is decided by one percentage point, partisan polls are expected to be .42 points less accurate than university polls. If the election is decided by 5 percentage points, partisan polls are expected to be 2 points less accurate (though the other interaction effects would have to be taken into effect). We should also note that, contrary to our expectations, IVR and Internet polls are not significantly different from the baseline category (CATI polls) in their expected error, and partisan IVR polls seem to actually be better than other polls in their predictions (though this result is most likely driven by a very small number of such polls included in the sample). Parsing these results becomes much easier when we examine the expected values of the error resulting from them.

Figure 1: Expected Survey Accuracy by Outcome, Non-Partisan Telephone Polls



In Figure One, we present the expected ranges of error for a variety of electoral outcomes for non-partisan telephone polls.[10] In all cases, the most likely outcome is a survey result between two and five points away from the actual election result. The likelihood of catastrophic error – survey error greater than 10 points – remains relatively low throughout. The result is quite different, though, when we analyze the expected ranges of error of partisan polls.

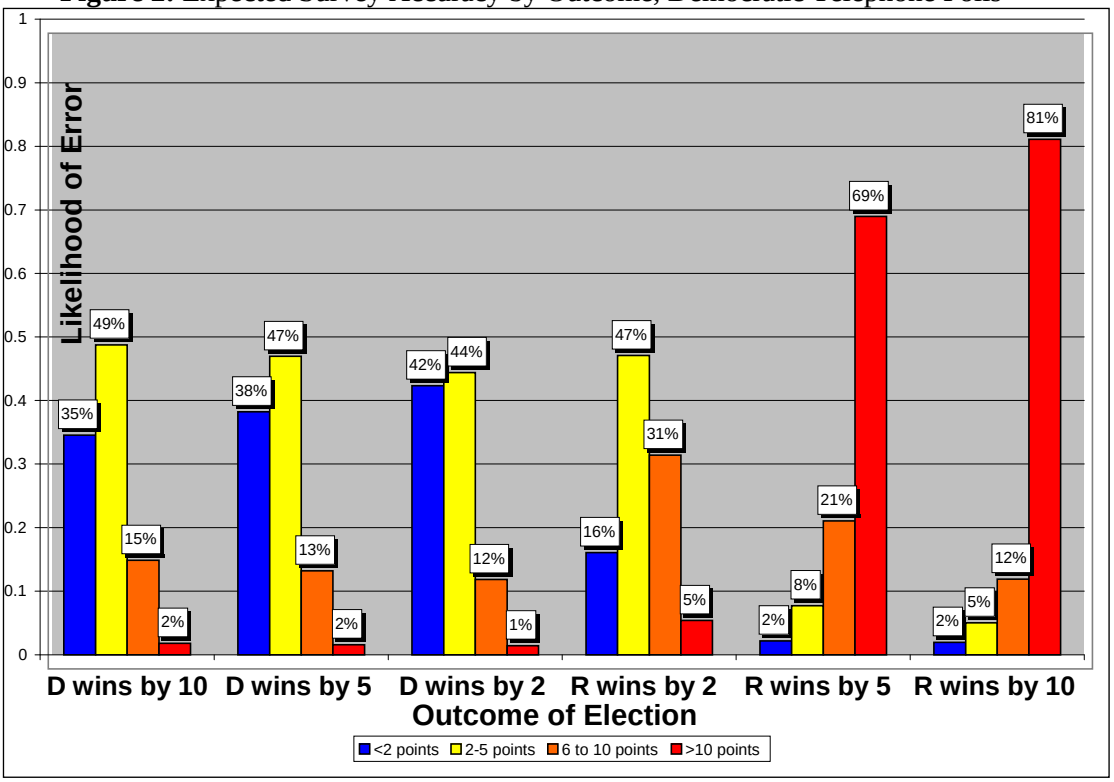
In Figure Two we see that Democratic telephone polls actually have a lower expected error rate than non-partisan polls: but only in circumstances in which the Democrat is winning. In elections where the Democrat wins by two points, there's a 42 percent chance of a prediction less than two points away from the actual result and a 44

[10] Telephone polls using CATI technology was the most common mode of data collection among non-partisan pollsters (49%).

percent chance of a prediction two to five points away from the actual result. If the election leads to the Republican winning by two points, though, the odds of a prediction less than two points away from the actual result drops to 16 points, and the odds of an error greater than five points rises to almost 37 percent.

The expected error rate is worse for Republican polls. When the Democratic candidate wins the election by two points, there is a 55 percent chance of an error greater than five points away from the actual result, including a 13 percent chance of an error greater than 10 points. In cases where the Republican wins by 2 points, there is an 80 percent chance of error greater than five points, including a 34 percent chance of an error greater than 10 points away from the actual result.

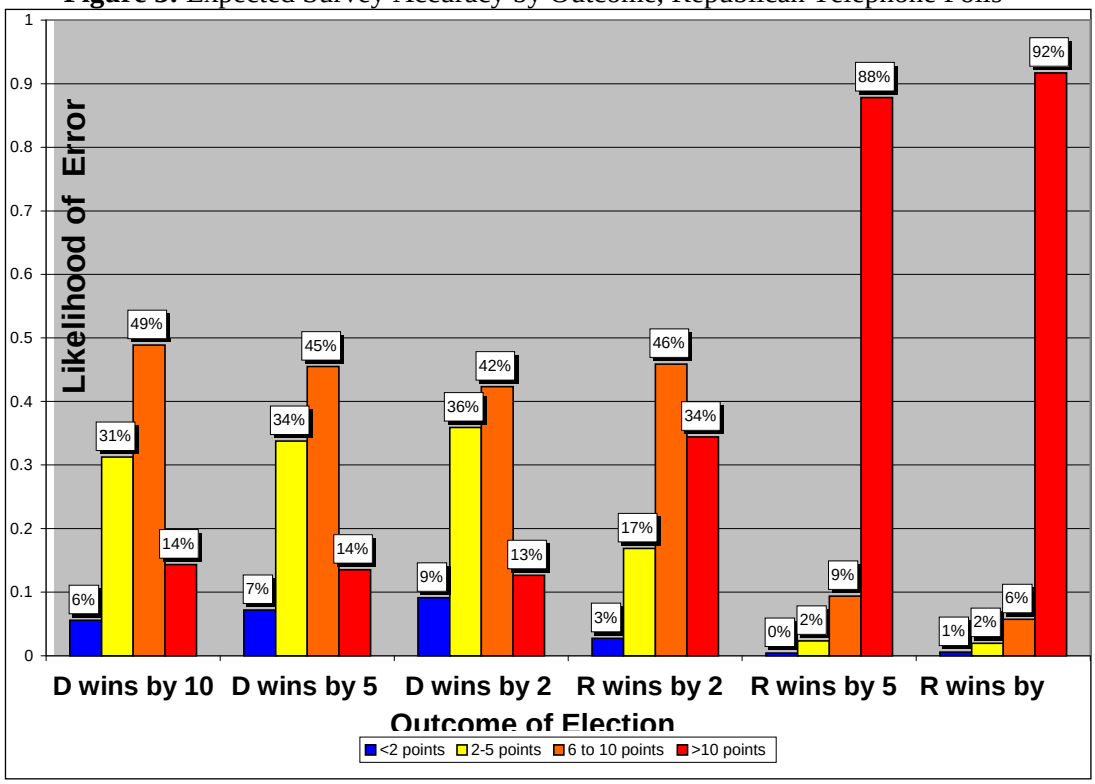
Figure 2: Expected Survey Accuracy by Outcome, Democratic Telephone Polls



These error rates increase exponentially as we move into situations where Republicans win by greater margins, though we pay less credence to these results as there were few actual elections ending in such results.[11] Still, the difference between partisan and non-partisan telephone polls is striking, especially given how they vary depending on the election result. This gives rise to the implication that the error is strategic, but is far from definitive evidence.

[11] Arizona was +9 for the Republican; Nevada +14; and Texas +26

Figure 3: Expected Survey Accuracy by Outcome, Republican Telephone Polls



For this sort of evidence, we make use of a simple OLS model of the bias in the predictions. The dependent variable in this analysis is simply the difference between the Democratic and Republican vote share in the actual election and that estimated by the poll. Our model is based on the overall closeness of the election, the modality of the poll (as in the above model), and whether the poll was carried out by a Republican or a Democratic polling group.

Table 3: Analysis of Bias in Predictions

Predictor	Beta	Std Error	T
Closeness of Election	0.039	0.043	0.9
Internet Poll?	0.347	1.064	0.3
IVR Poll?	-0.074	0.954	-0.1
Republican Poll?	**4.371**	**1.576**	**2.8**
Democratic Poll?	**-4.466**	**1.527**	**-2.9**
Constant	0.874	0.772	1.1

Bolded coefficients are significant at p<.05

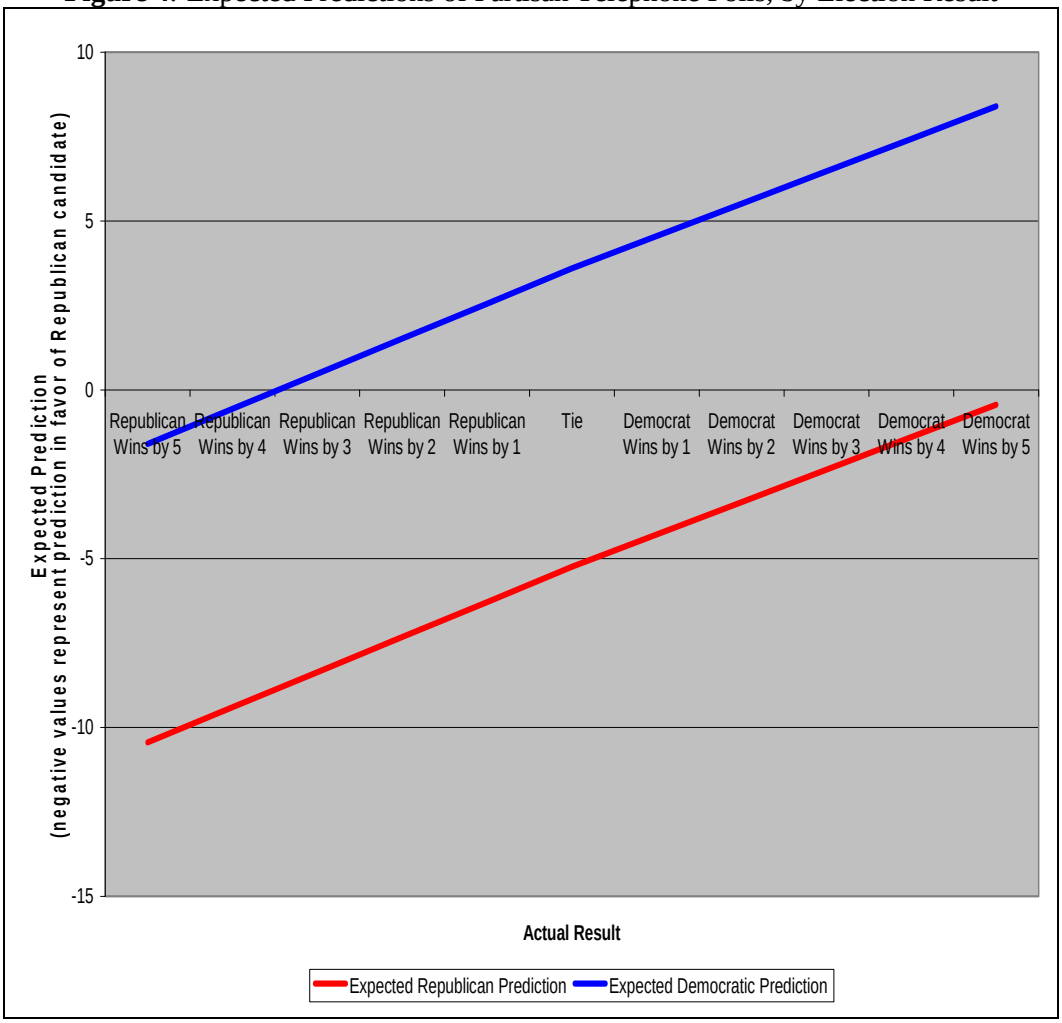
The R^2 of the model is relatively low, at .105, but this doesn't undercut the strong effect of the party of the polling group on the bias. All else equal, Republican polls in the senate races overestimated the Republican vote by 4.4 points, while Democratic polls overestimated the Democratic vote by 4.5 points.

Figure Four demonstrates the expected predictions of Republican and Democratic polls, by the actual outcome of the election. As would be expected, the greater the vote share won by the Democrat, the greater the estimated vote share for the Democratic candidate in the poll. Ignoring sampling error, a completely non-biased poll

would predict a value of -5 when the Republican candidate was to win the election by 5, a value of 5 when the Democratic candidate won the election by 5, and an even slope in between. The shift up, or down, from this hypothetical unbiased line demonstrates the systematic bias hypothesized earlier.

In essence, Republican polls are expected to call a race in favor of the Republican candidate even in cases in which the Democratic candidate wins by more than 5 points. Democratic polls are expected to call a race in favor of the Democratic candidate in all situations where the actual result is a Republican victory of less than 3.5 points. Unlike in the analysis of error, the overall closeness of the election does not seem to have an impact: the main effect is insignificant, as were interaction effects tested in models not presented here. Rather, as suggested by Figure Four, partisan polls seem to have a systematic bias in favor of their own party, with Republican polls showing slightly more bias. Again, this does not mean, that this bias is intentional. The bias could result from a number of factors, such as sample selection, weighing, question wording or order. It is, however, systematic, predictable and robust.

Figure 4: Expected Predictions of Partisan Telephone Polls, by Election Result



Discussion

In recent years, we have seen the advent of the metapoll as a means of accurately tracking electoral dynamics. Pollster.com, FiveThirtyEight.com, and other websites aggregate polling data from a large number of available sources, and combine them to reach a conclusion about what's really going on in the race. These predictions have even gained traction in the news media as the most accurate figures available. The assumption underlying these metapolls is that the more data we have, the better the aggregated estimates will be: data, even flawed data, is always better. Indeed, those who spend a great deal of time informing the electorate about who's up and who's down might argue that if survey results show error, it isn't a problem. Another survey will have error in the opposite direction, and everything will average out. However, as our results show, this is not always true. Our results suggest some surveys show systematic bias and the inclusion of these surveys will move the aggregated average in the direction of the bias.

This is potentially problematical, especially in light of the increased trend among journalists to base their commentary on metapoll trends. As newsrooms are faced with financial cutbacks, the reliance on the horse race aspect of electoral contests makes the accuracy of surveys even more critical. Add to this the growing hostility toward pollsters and questioning of their methods by the general public, and results such as ours heighten the need for systematic bias to be eliminated in order for it not to be unwittingly disseminated by reporters, analysts, bloggers, and opinion journalists (Blumenthal 2005: Rosensteil 2005).

Our findings are also relevant for the increased likelihood of lumping partisan with non-partisan surveys in aggregate trend analyses. Although there was no main effect of partisan polls on the accuracy of polls, the interaction effects, and the figures demonstrating the expected results, and the analysis of bias all show how much less accurate partisan polls are than non-partisan polls. The fact that Republican polls generally did worse than Democratic ones could certainly be a finding that is time bound. That is, the national mood in 2006 did not favor Republican candidates. Perhaps if the mood was reversed and Democratic candidates fared worse relative to Republican senate candidates, we would be pointing out the greater difficulty that Democratic pollsters had in predicting electoral outcomes. However, if the more generic finding that partisan polls fare worse than their non-partisan counterparts remains true across electoral contests, their inclusion in aggregate analyses poses problems for providing an accurate snapshot of where the public is *vis a vis* candidate preference. Moreover, the fact that Democratic polls actually performed better in the 2006 Senate races in many circumstances than non-partisan polls is helpful, but we only know what those circumstances are *after* the election.

Finally, error is part of surveys, but the ultimate goal of survey researchers should be the reduction of error wherever it exists. Random, unpredictable error is among the most difficult type of error to address. Our paper does not highlight this type of error, but rather error that which occurs in a systematic, predictable fashion. We acknowledge our research is limited in its data set of what transpired in one electoral season. However, if these results are replicated in other contests and the same pattern emerges, it behooves researchers to address the reasons behind the disparities across surveys that are sponsored by partisan and non-partisan sources. If this error is unintentional, then we should identify its sources and identify the differences between the Republican and Democratic polls that lead to it. If it is intentional, we owe it to the public to find that out, as well.

Appendix: Coding of Source Pol**ls**

University
Arizona State University. Northern Arizona University, Quinnipiac University, Fairleigh Dickinson University, Suffolk University, U. of New Hampshire, Humphrey Institute, St. Cloud State University, Rutgers/Eagleton, Monmouth University, Marist College, University of Cincinnati, Muhlenberg College, Franklin & Marshall College, Temple University, West Chester University, Rhode Island College, Roanoke College, U. of Washington

Commercial
Zogby, Zogby Interactive, Zogby/Wall Street Journal, Zimmerman and Assoc., Mason Dixon, Polimetrix, SurveyUSA, Rasmussen, Field Poll, Los Angeles Times, Research 2000, Potomac Inc, Gallup, EPIC/MRA, Minneapolis Star Tribune, Los Angeles Times , CBS News/NY Times, Columbia Dispatch, Opinion Consultants

Partisan
Harstad Strategic Research, Public Opinion Strategies, Strategic Vision,
Scroth Eldon and Assoc., Voter-Consumer Research, Garin-Hart-Yang Research,
Lake Research, Bennett, Petts & Blumenthal, OnPoint Polling & Research, Benenson Strategy Group, Hamilton\Beattie,

References

AAPOR Ad Hoc Committee on the 2008 Presidential Primary. 2009. "An Evaluation of the Methodology of the 2008 Pre-Election Polls" (revised version, April 2009), accessed on line at http://www.aapor.org/uploads/AAPOR_Rept_FINAL-Rev-4-13-09.pdf

Bialik, Carl. "Polls Foresaw Future, Which Looks Tough for Polling" *The Wall Street Journal*, 6 Nov.2008 accessed online at http://online.wsj.com/article/SB122592455567202805.html?mod=djemnumbers#project%3DPREZPOLL08%26articleTabs%3Darticle

Bloom, Joel David and Jennie Elizabeth Pearson. 2005. "A Probability-Theory Based Test of the Reliability of Election Polls." Paper presented at the Annual Conference of the American Association for Public Opinion Research, Miami, Florida and accessed online at http://www.surveyusa.com/ROR/AAPOR2005BloomOregon.pdf.

Bloom, Joel David. 2003. "Reliable Compared to What? Empirical Tests of the Accuracy of Election Polls," Paper presented at the Annual Conference of the American Association for Public Opinion Research, Nashville, TN and accessed online at http://www.pollster.com/blogs/Bloom_AAPOR03revision.pdf

Blumenthal, Mark M. 2005. "Toward an Open-Source Methodology: What WE can Learn from the Blogosphere." *Public Opinion Quarterly* 69(5):665-669.

Blumenthal, Mark M. and Charles Franklin. 2007. "Methods and Horse Races: Phone, IVR and Internet Polls in the 2006 Elections." Paper presented at the *Annual Conference of the American Association for Public Opinion Research*, New Orleans, LA and accessed online at http://www.pollster.com/blogs/Franklin_Blumenthal_2007_AAPORPresentation.pdf

Gawiser, Sheldon R. and G. Evans Will, *A Journalist's Guide to Public Opinion Polls*, Preager, 1994.

Harrison, Chase. 2009. "Methods, Forecasts, and Elections: Statewide Presidential Polls in 2008." Paper presented at the *Annual Conference of the American Association for Public Opinion Research*, Hollywood, FL.

National Council on Public Polls, Polling Review Board. 2004. "The 2004 Election Polls" accessed on line at http://www.ncpp.org/drupal57/files/2004%20Election%20Polls%20Review.pdf

Rosensteil, Tom. 2005. "Political Polling and the New Media Culture: A Case of More Being Less." *Public Opinion Quarterly* 69(5):698-715.