

Internal Report of Minnesota Public Radio News and Humphrey Institute Polls During 2010

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Professor Jacobs received his Ph.D. in political science from Columbia University in 1990 and has published 11 books and dozens of articles on public opinion, elections, and other aspects of American politics. Professor Miller received a Ph.D. in psychology in 2000 and has published studies on voter choices of candidates and issues as well as the conditions under which individuals become politically involved.

Partnership and Purpose of Internal Report

The Hubert H. Humphrey Institute of Public Affairs (HHH) partnered with Minnesota Public Radio News (MPR) to conduct four polls during the 2010 election year. Humphrey Institute and political science Professor Lawrence Jacobs directed the research and managed the relationship with MPR; Political Science Professor Joanne Miller collaborated with the research.

Both MPR News and Professors Jacobs and Miller jointly determined the content of the questions. There was a division of labor regarding other responsibilities: MPR set the timing of the surveys to meet its schedule; HHH oversaw the survey process and conducted the analysis of the polling data.

The 2010 election was the fifth campaign cycle during which Professors Jacobs and Miller conducted polling and the second cycle they worked with MPR News. After each cycle, they reviewed their work based on best practices in survey research and often made revisions in various components of their research. After the 2010 election cycle, they decided to write up their usual review in the form of an internal report. To draw on additional expertise, they consulted with national experts and requested that one of the country's leading pollsters – Frank Newport -- independently review their report. (Mr. Newport is Editor-in-Chief of the Gallup Organization, author of numerous articles and books, current president of the lead professional polling organization – American Association for Public Opinion Research – and recipient of a doctoral degree in sociology from the University of Michigan.)

This report provides an opportunity to address questions about the MPR/HHH results as part of a discussion of the science of survey research, statistical analysis, and probability and survey sampling distributions.

Addressing Questions About Prediction and Accuracy

The primary question about the MPR/HHH survey arose after Election Day: The tally of votes showed Democratic gubernatorial candidate, Mark Dayton, with a 0.42% lead over his Republican rival Tom Emmer (43.63% to 43.21%). By comparison, the final MPR/HHH survey based on interviewing that began almost two weeks before Election Day showed Dayton with a 12 point lead (41% to 29%). (Tom Horner received 11% in the MPR/HHH poll and 11.94% of the vote.)

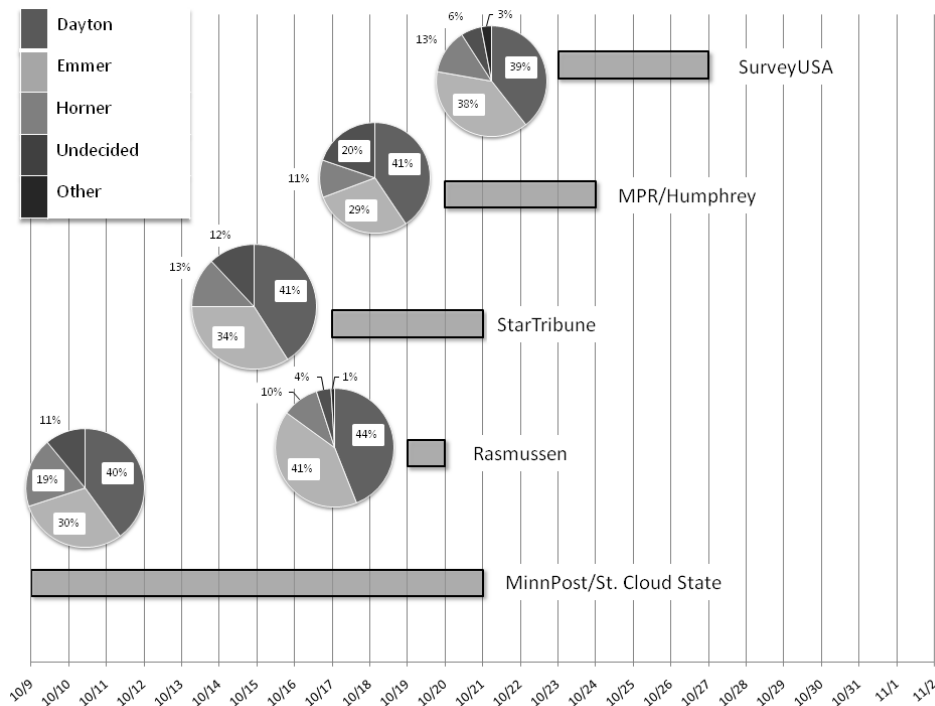
The comparison of Election Day results with the MPR/HHH pre-election poll rests on two misconceptions of survey research.

1. Polls as Snapshots in Time, Not Predictions

Polls do not offer a “prediction” about which candidate “will” win. **Polls are only a snapshot of one point in time.** The science of survey research rests on interviewing a random sample to estimate opinion at a particular time. Survey interview methods provide no basis for projecting winners in the future.

How well a poll’s snapshot captures the thinking of voters at a point in time can be gleaned from the findings of other polls taken during the same period. Figure 1 shows that four polls were completed before the final week of the campaign when voters finalized their decisions. (Survey USA completed its interviewing during the last week of the campaign.)

Figure 1. Final Media Polls Conducted Before Election Day



The snapshots of the electorate based on interviewing as voters finalized their decisions in the last week of the campaign were, as expected, closer to the Election Day tally than the polls by MPR/HHH, MinnPost/St. Cloud, and the Star Tribune based on interviewing more than a week from Election Day.¹ The last poll by Survey USA showed Dayton with a 1 point advantage while three of the four earlier polls showed Dayton’s lead ranging from 7 points to 12 points. This difference between pre-election polls conducted close to Election Day and those further away is not unusual; interviewing conducted in the last few days of the campaign is likely to better estimate likely voters and to capture the final decisions of voters who were previously undecided or shifting between candidates. (Rasmussen reported a Dayton lead of 3 points – a finding that we address below.)

Polling in California illustrates the importance of treating polls as a snapshot. Rasmussen and Survey USA polls in mid-October showed incumbent U.S. Senator Barbara Boxer leading by 2 points; she won by nearly 10 points (9.8 points). During this same period, four other polls listed by RealClearPolitics.com showed Boxer leads of 8 to 9 points. It is quite possible that these snapshots were more accurate than those taken by Rasmussen and SurveyUSA, but, as we will suggest below, we do not know for certain. The importance of polling close to Election Day was illustrated by subsequent SurveyUSA polls during the last weeks of the campaign; they reported

Boxer's lead as jumping from 2 points in mid-October to 5 points and then 8 points just days before Election Day. (Rasmussen's poll on November 27th continued to find a narrow Boxer lead of 3 points.)

In terms of the Minnesota gubernatorial election, polls by Rasmussen and SurveyUSA showed the Dayton-Emmer race close throughout the fall – they had the race within 1 or 2 points in September and reported Dayton leads of 1 to 5 points in October. These polls were closer to the final vote tally but it remains an open question whether their snapshot was accurate at the time of their polling. It is entirely possible that the cluster of other polls before the last week of the campaign, which showed Dayton's lead ranging from 7 to 12 points, were providing a more accurate snapshot of the particular time of their interviewing.

Appropriately interpreting Minnesota polls as a snapshot is especially important because President Barack Obama's visit on October 23rd very likely created what turned out to be a temporary surge for Dayton. Obama's visit occurred in the middle of the interviewing for the MPR/HHH poll; it was the only survey in the field when the President spoke on October 23rd at a rally widely covered by the press. Our write-up of the MPR/HHH poll emphasized that the President appeared to substantially increase support for Dayton and suggested that this bump might last or might fade to produce a closer race:

Effect of Obama Visit: Obama's visit to Minnesota on October 23rd and the resulting press coverage did increase support for Dayton. Among the 379 likely Minnesota voters who were surveyed on October 21st and 22nd (the 2 days before Obama's visit), 40% support Dayton. By contrast, among the 145 likely Minnesota voters who were surveyed on October 24th and 25th (the 2 days after Obama's visit) 53% support Dayton. This increase in support for Dayton could be a trend that will hold until Election Day, or it could be a temporary blip that will dissipate in the final days of the campaign and perhaps diminish his support.

Obama's impact in temporarily inflating Dayton's lead is a vivid illustration of the importance of using polls as a snapshot. Indeed, according to the MPR/HHH poll, Dayton's lead before Obama's visit was 8 points – nearly identical to the Star Tribune's lead at nearly the same point in time (7 points). Treating polls as snapshots, then, is especially important when a major event may artificially impact a poll's results or, as in the case of the MPR/HHH poll, there were a large number of voters who were undecided (about 1 out of 6 voters) or were considering the possibility of shifting from a third party candidate to the Democratic or Republican candidate.

The take-home point: polls are only a snapshot of what can be a fast moving campaign as events intervene and voters reach final decisions. Polls conducted closest to Election Day are most likely to approximate the actual vote tally precisely because they are capturing the changing decisions of actual voters.

Recommendation #1:

The single most important factor in whether a well-designed poll closely approximates the result of Election Day is its proximity to Election Day. Polls conducted just before Election Day will be closer to the actual vote tally than those conducted some time from Election Day because of the final decisions of likely voters who had previously been undecided or torn between several candidates. Conversely, interviews conducted more than a week before Election Day will catch many voters before they have chosen a candidate and decided definitively to vote. Voter indecision may be particularly pronounced in competitive multi-candidate races as voters float among candidates or remain undecided until Election Day nears.

In early October, Jacobs and MPR news staff did discuss when to conduct the interviewing for the final MPR/HHH poll. The decision was made to start the interviewing nearly two weeks before Election Day in order to provide a snapshot heading into the last week of the campaign as voters began to finalize their decisions. A proposal to conduct the interviewing closer to Election Day in order to increase its approximation of the actual vote tally was turned down. In hindsight, this decision underappreciated the tendency to treat polls as predictive. In the future, we recommend that the final poll in October should be conducted during the last week of the campaign.

2. Mind the Margins

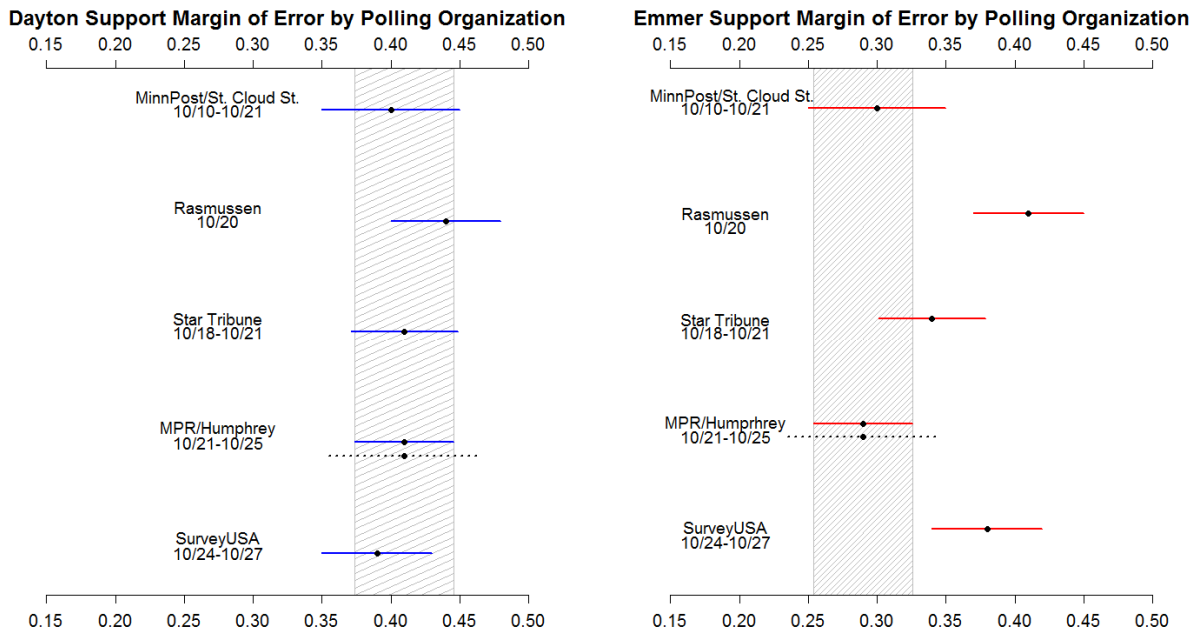
Differences between polls may not be substantively significant as illustrated by the case of MinnPost's poll with St. Cloud State, which showed Dayton with a 10 point lead, and the MPR/HHH poll, which reported a 12 point lead.

The "margin of sampling error," which is calculated based on uniform formulas used by all polling firms, creates a cone around the estimate of each candidate's support, reflecting the statistical probability of variation owing to random sampling.² The practical effect is that the results of the MinnPost poll with St. Cloud State and MPR/HHH are, in statistical terms, within range of each other. Put simply, the 2 points separating them may reflect random variation and may well not be a statistically meaningful difference.

Figure 2 creates a zone of sampling error around estimates of support for Dayton and Emmer by the five media polls completed during the last two weeks of the campaign.³ In terms of the estimates of Dayton's support, the MPR/HHH poll is within the range of all four other polls. Take home point: its estimate of Dayton's support was consistent with all other polls.

In terms of Emmer's support, the poll estimates by the Star Tribune and MinnPost/St. Cloud fall within the MPR/HHH poll's conventional margin of sampling error. Their differences may be explained by random variation. In its reports during the 2010 election season, the MPR/HHH poll included a larger margin of error based on the professional best practice of accounting for "design effects" (for instance, that no poll interviews all of the individuals in the selected sample). Using this "design effect" margin would extend the MPR/HHH poll estimate of Emmer support into the range of the SurveyUSA poll in what might be considered the "outer bound" of statistical probability.

Figure 2. Estimates of Candidate Support Within Margin of Error in October 2010.



Note: The bolded dot is the percent support for each candidate; the solid line is the range of sampling error within which the candidate's support may lie after accounting for the margin of sampling error as conventionally calculated. The dotted line is the more cautious estimate of sampling error that accounts for “design effects” such as the failure to interview all individuals who are contacted. This was reported in the MPH/HHH reports and is recommended by specialists in survey methodology. All of the Humphrey Institute’s poll write-ups in 2010 can be found here – http://www.hhh.umn.edu/centers/cspg/humphrey_polling/2010.html

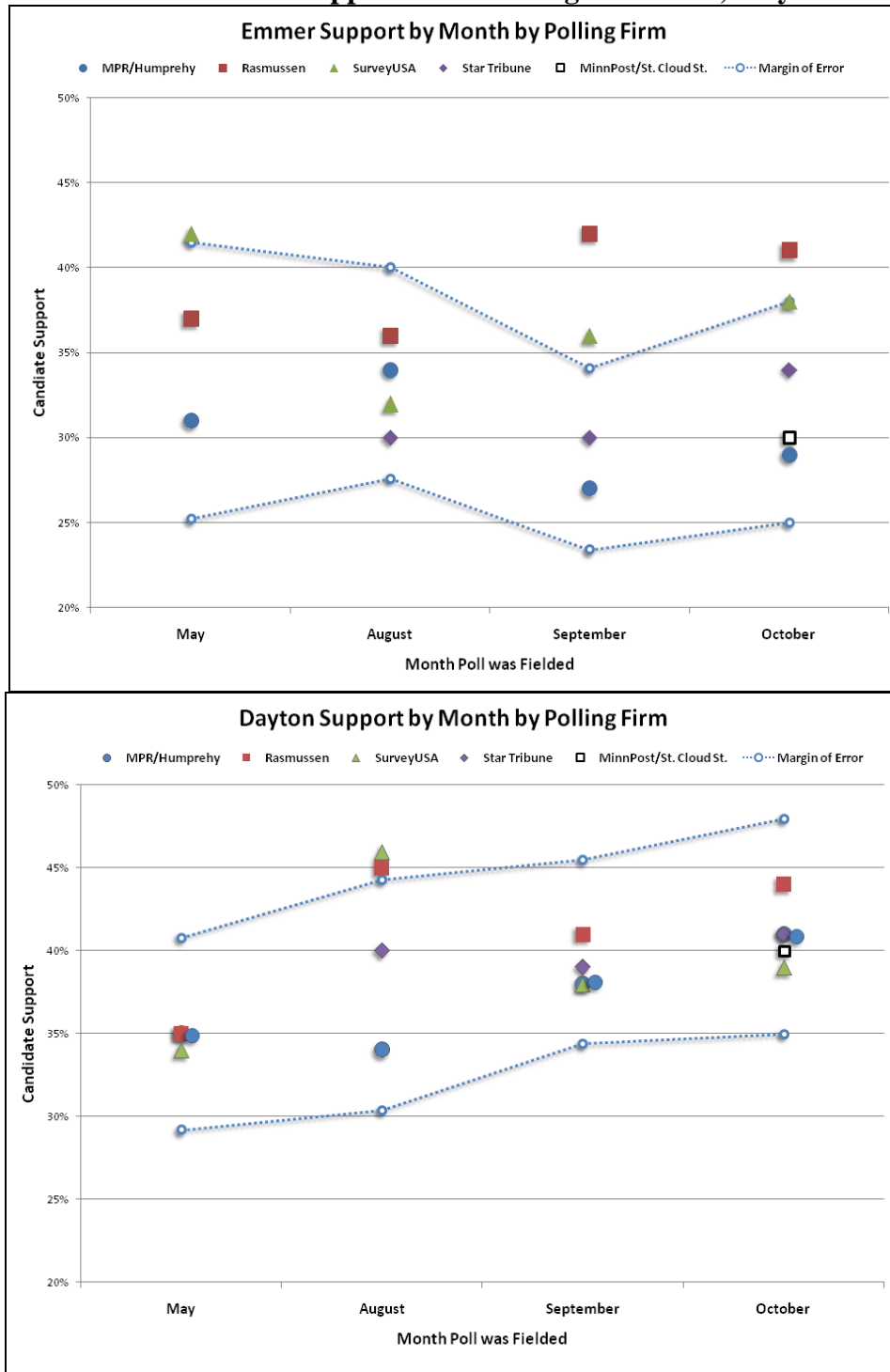
Recommendation #2: Future reports might include the results for other polls and their margins of error. This would allow readers to compare the MPR/HHH poll with those conducted by other media organizations. This would allow readers to identify the range of polls and whether poll estimates for a candidate fall within the margin of error of other poll results.

3. Putting October Polls in the Context of Previous Polls in 2010

Treating polls as snapshots and applying the margin of error reveals a more general pattern: the MPR/HHH polls since May were generally consistent with the results of other contemporaneous polls. Figure 3 shows 16 media polls conducted during the time of the MPR/HHH surveys and whether their estimates of candidate support falls within the range of sampling error (this range is based on the margin of sampling error for the MPR/HHH polls and that of the other media polls, as presented in Figure 2).⁴

The results confirm the general pattern reported above: the MPR/HHH polls were quite consistent with other pre-election polls. The MPR/HHH estimate for Emmer fell within the range of error in 9 of 12 surveys dating back to May and its estimate for Dayton was within the range in 10 of 12 polls.

Figure 3. Estimates of Candidate Support Within Margin of Error, May to Oct 2010



Note. The dotted lines mark the upper and lower range of statistical estimates based on the margin of sampling error for the MPR/HHH polls and that of the other media polls.⁵ The Rasmussen poll conducted on October 6 is excluded in favor of its later poll.

The overall conclusion from this internal review is that the questions about the difference between a narrow Dayton win and the MPR/HHH poll are explained by the principles of scientific survey research. We did discover some areas for improvement, which we turn to next.

Areas for Improvement and Recommendations

In the process of reviewing the MPR/HHH polling, this report did find – as have past reviews – areas for improvement. Below, we discuss some of these areas for future improvement as well as aspects of our investigations that revealed no significant problems.

1. Higher Proportions of Voters Who Did Not Declare Candidate Support

Polls conducted before the final days of a campaign often find that individuals have not yet settled on a candidate of choice. Table 1 shows that all media polls in the final weeks of the campaign interviewed voters who would not indicate which candidate they supported. The MPR/HHH poll reported the greatest proportion of respondents not reporting a favorite candidate. Part of the gap may stem from differences in how each poll handles individuals who refuse to answer (that is, “refusals”) and are undecided in choosing among the candidates. For instance, some firms (including MinnPost/St. Cloud poll and perhaps others)⁶ appear to exclude individuals who refuse to indicate the candidate they support, which would lower their non-response rates. The MPR/HHH poll counts these “refused” respondents, which account for 3% of voters in October who were asked for their candidate preference. There may be other technical steps that other polls take to lower the reported percentage of respondents who do not report their candidate preference.

Table 1. Voters Not Declaring Candidate Support

| | Percentage Not Indicating Preference for A Candidate |
|--------------------|--|
| MPR/HHH Poll | 16% |
| Star Tribune | 12% |
| MinnPost/St. Cloud | 8% |
| Survey USA | 6% |
| Rasmussen | 4% |

Note : The MPR/HHH poll excludes the 3% of respondents who refused to indicate their candidate support.

Even with some latitude for difference among survey organizations, the MPR/HHH poll has a greater proportion of undecided respondents. Our own analysis along with consideration of existing research and consultations with leading national experts leads us to several possible explanations and a recommendation for improvement. One possibility that we considered and then rejected because of a lack of evidence is that the interviewers were too quick to accept a refusal or undecided response from individuals being interviewed. This is a reasonable issue to flag given past research on what is known among experts as “house effects.”⁷ We investigated it by comparing a similar question asked by MinnPost/St. Cloud about whether Minnesota was heading in the right direction or not: while non-response to the MPR/HHH question regarding candidate preference was higher than reported by MinnPost/St. Cloud (16% versus 8%), it was comparable on the Minnesota direction question – 10% in MPR/HHH versus 6% for

MinnPost/St. Cloud. We do not view this difference as substantively significant, especially because MinnPost/St. Cloud recorded a “neither” option; respondents in the MPR/HHH poll who wanted to say “neither” would have been recorded as “don’t know.” This and similar investigations suggest that the elevated “don’t know” response in the MPR/HHH poll stems from particular features of the candidate preference question rather than a more general approach to interviewing.

Another possibility that is more plausible relates to a large body of research known as “question order” effects, which finds that the order in which questions are asked in a survey can affect responses.⁸ The first question in the MPR/HHH poll asks individuals to indicate which candidate they support; this question was put first to avoid having earlier questions impact voter thinking. For instance, research would suggest that immediately preceding the question about candidate preference with questions about the state of the economy or support for the Tea Party would likely influence individuals by drawing their attention to particular considerations (e.g. voters might support Republican candidates more than Democratic candidates if they were primed to think about the economy that has worsened under Obama). Ironically, in trying to avoid this problem, we now suspect that putting the candidate question first may have produced an unintended effect of discouraging some individuals from answering the “horserace” question – that is, their preference for one of the candidates. Asking individuals about a topic that they may feel is private before a rapport is established may lead some to decline to answer. To explore the plausibility of this possible explanation,⁹ we examined the questionnaires of polling firms that made them available (we were unable to obtain the Rasmussen questionnaire). We discovered that the October questionnaires used by MinnPost/St. Cloud, Star Tribune, and SurveyUSA all asked at least a few questions *prior* to the horserace question¹⁰ and were likely better able to establish a level of comfort with voters who were then more inclined to reveal their candidate preferences. Without conducting a systematic experiment, it is impossible to know for sure, but we suspect that asking a few (apolitical) questions prior to the horserace question is necessary to build enough rapport to encourage more respondents to say whom they support.

Recommendation #3: Our recommendation for future surveys is to ask relatively innocuous questions (possibly about voter registration and the likelihood of voting) prior to probing for preferences among candidates. We believe that this will help build some rapport without affecting individuals’ responses as to which candidate, if any candidate, they support.

2. Greater Cooperation in Minneapolis

Careful review of polls in the field conducting interviews during the same period indicates that the MPR/HHH estimate for Emmer (see Figure 2) was within the margin of sampling error of 3 of the 4 other polls but that it was also on the “lower bound” after accounting for random sampling error. (Its estimate was nearly identical to that of MinnPost’s poll with St. Cloud.) This pattern is not “wrong” given the need to account for the margin of sampling error, but it is also not desirable. As part of our usual practice, the post-election review investigated whether there were systematic issues that could be addressed.

Research suggests three potential explanations for the MPR/HHH estimate for Emmer; none revealed problems after investigation.

Weighting: First, it made sense to examine closely the weighting of the survey data in general and the weighting used to identify voters most likely to vote. Weighting is a standard practice to align the poll data with known demographic and other features such as gender and age that are documented by the U.S. Census. (Political party affiliation is a product of election campaigns and other political events and is not widely accepted by survey professionals as a reliable basis for weighting responses.)

Our own review of the data did not reveal errors that, for instance, might inflate the proportion of Democrats or depress that of Republicans who are identified as likely to vote. To make sure our review did not miss something, we solicited the independent advice of well-regarded statistician, Professor Andrew Gelman at Columbia University in New York City, who we had not previously worked with or personally met. Professor Gelman concluded that the weighting was “in line with standard practice” and confirmed our own evaluation.

Scientific survey research does not support several suggestions for modifying the MPR/HHH weighting. For instance, we have been told that polling by one candidate matched poll respondents with the state’s voting records to “verify” that they were likely to vote. Among the flaws with this approach are the following: (1) A large proportion of Minnesota voters register on Election Day and therefore would be excluded by this approach as likely voters; (2) Registration to vote is not a guarantee of actually turning out to vote, especially in lower turnout midterm elections. (The MPR/HHH poll does use a statistical model to identify likely voters that takes into account – as do other quality surveys – whether the respondent is registered to vote as well as the individual’s past voting patterns and interest or enthusiasm in voting in the current election.)

“Interviewer Effects”: Our second investigation was of what are known as “interviewer effects” based on research indicating that the race of the interviewer may impact respondents.¹¹ (Forty-four percent of the interviewers for the MPR/HHH poll were minorities, mostly African American.) In particular, we searched for differences in expressed support for particular candidates based on whether the interviewer was Caucasian or minority. This investigation failed to detect statistically significant differences.

Randomization of Candidate Names: Third, we checked that the response categories were randomly rotated. When individuals are orally asked for their preferences, they tend to choose the option they hear last.¹² For instance, Dayton’s polled support would likely be higher if his name was systematically asked just before respondents were asked which candidate they supported. The solution to this “recency effect” is to order names in a random manner. In the MPR/HHH poll, each candidate’s name was mentioned last at similar rates. (The Star Tribune and MinnPost/St. Cloud polls followed the same practice; Survey USA rotated Dayton and Emmer but kept Horner last for all respondents; Rasmussen did not provide its questionnaire.) Our investigation of the MPR/HHH polls confirmed that the order of the candidate’s names was

in fact rotated; none of the three candidates were disproportionately advantaged by the order in which their names were presented to respondents.

When analyzing a poll to meet a media schedule, it is not always feasible to look in-depth at internals. With the time and ability that this review made possible, we discovered in retrospect that individuals called in the 612 area code were more prone to participate than statewide -- 81% in the 612 area as compared to 67% statewide in the October poll.¹³ Given that Democratic candidates traditionally fare well among voters in the 612 area code, the higher cooperation rate among likely voters in the 612 area code may explain why the estimate of Emmer's support by MPR/HHH was slightly lower than those by other polls conducted at around the same time. This is the kind of lesson that can be closely monitored in the future and addressed to improve polling quality.

Recommendation #4: We recommend that future surveys include a weight for geographic region to account for differences in cooperation rates in different parts of Minnesota. (This weight would be in addition to standard demographic and other weights that are currently used.)

3. Adapting to Greater Cell Phone Use

An increasing number of Americans – especially younger cohorts – have cell phones and no landline phones. This is a growing issue for pollsters around the country who have in the past drawn their samples of respondents based on landline phone exchanges. Like others who conducted polls in 2010, we initially considered adding “cell phone only” respondents to the pool of those interviewed and would recommend that this be seriously reconsidered in future polling. One consideration in 2010 was that including cell-phone only respondents would increase costs with only a partial impact on results because younger voters have a history of comparatively lower turnout – a pattern that might be particularly evident in a mid-term election.

Recommendation #5: We recommend that future surveys give serious consideration to broadening the sample to include “cell phone only” respondents.

We want to emphasize that the issue of cell phone use is separate from concerns that the MPR/HHH poll may have underestimated support for Republicans in 2010. Because younger voters tend to disproportionately support Democrats, the omission of cell-phone only respondents is almost certainly not a factor in under-estimating Republican support.

Reflections on Polling in Heated Political Campaigns

Our professional life revolves around publishing research that is rigorously reviewed anonymously by similarly trained experts. The definitions of quality and judgments about what deserves to be published are widely understood; disagreements are invited but they occur on the basis of widely accepted understandings of methods, theory, and standards of evidence.

Our polling during election campaigns is reviewed in a broader public arena. This is entirely appropriate and what we and our colleagues expect. There are several challenges, though, that we want to mention in closing.

First, the review of polls by the public writ large can be astute, and the online posting of all media polls has empowered everyone to consider individual polls in the context of the full set of surveys. We welcome this and for years we have recommended just this development. The challenge, though, is sorting through the public commentary on polls to decipher legitimate concerns versus those that are driven by ego or by the strategic maneuvering of politicians and their hired consultants and allies in an intensely political environment. There is no cure for this challenge other than robust debate, one that we hope would include deliberative judgment in place of sweeping snap decisions that are without merit.

Second, the broad reactions to polls are often driven not so much by one poll as by a general dissatisfaction with polling and its increased frequency and visibility. In our view, polls can be misused but they also offer a valuable tool for several positive purposes. First, because political campaigns conduct their own polls to design strategy that is aimed at manipulating voters, should not voters have access to information that might provide insight into campaign schemes?

Polls also identify the concerns of everyday voters in a highly charged environment in which powerful interests are working around the clock to set the terms of debate. For instance, the MPR/HHH poll helped to document the overwhelming concern of Minnesota voters about jobs and the economic distress that they and others were (and still are) experiencing, and, by contrast, the near absence of concern with previously prominent social issues related to abortion and gay marriage. They also helped to confirm a broad pattern found in previous survey research – namely, a conservative inclination toward smaller government thought about in the abstract and a more liberal inclination toward raising taxes to avoid cuts in important, specific government services like health care. Knowing which candidates and issues are drawing voter interest is a key tool for journalists in considering whom to include in broadcast debates, which questions to put to the candidates and which to ignore or downplay, and a host of other critical concerns.

A persistent worry is that polls have an undue impact on general elections. Apart from whether any one poll is followed closely by voters who have not made up their minds (especially when a number of polls are being released), there is no consistent evidence to support the fear that polls influence general elections – they may encourage some voters while discouraging others. For instance, the MPR/HHH poll reporting Dayton comfortably ahead moving into the last week of the campaign may well have discouraged some Democrats from turning out in the belief that the election was a “done deal” and encouraging others who initially supported the Democrat to think they could vote their conscience by casting their ballot for Horner. Republicans who were initially supporting Horner may have been persuaded by Governor Tim Pawenty’s last minute campaigning that they were wasting their vote and should cast their ballot for Emmer.

Elections are the cornerstone of America’s democracy. The candidates and votes are the key players; polls are tools that occasionally appear to take a snapshot of the thinking of voters.

Their role is important but their influence is often inflated. Democracy remains the work of voters.

¹ The final day of interviewing for the MPR/HHH survey was, in effect, October 24. The original release on the poll indicated October 25 but only a handful of interviews (or about 1% of the total) were actually conducted on this date.

² Scientific polls identify the margin of error to be 95% confidence that estimates of candidate support fall within a range that accounts for variations associated with sampling a relatively small number of individuals to draw conclusions about the entire universe of voters. For instance, the October MPR/HHH poll reported that the conventional margin of sampling error was plus or minus 3.6 points. This means that in 19 cases out of 20 the results will differ by no more than +/-3.6 percentage points in either direction from what would have been obtained by interviewing all likely voters. Dayton's reported support of 41% could range from 37.4% to 44.6% while Emmer's reported support of 29% could range between 25.4% and 32.6%.

³ Figure 2 is based on the following margins of error (MOE) for each poll: MinnPost/St. Cloud St. is +/- 5; Rasmussen is +/- 4; Star Tribune is +/-3.9; MPR/HHH is +/-3.6 and the "design effect" MOE is +/-5.5; and SurveyUSA is +/-4.

⁴ Figure 3 is based on the following margins of error (MOE) for each poll conducted: MPR/HHH is +/- 5.8 in May, 3.6 in August, and 3.6 in September; Rasmussen is +/- 4.5 in May, 4 in August, and 4.5 in September; SurveyUSA is +/- 4.1 in May, 4.4 in August and 3.9 in September; Star Tribune is +/- 4.3 in August (the actual interviewing was conducted from July 27 to July 29), and 4.1 in September. The MOE for the October polls is listed for Figure 2.

⁵ For instance, the potential range of the MPR/HHH poll's estimate -- as high as 32.6% after adding its margin of error (3.6%) to its estimate of Emmer's support (29%) -- overlaps with the lower bound of the Star Tribune's 34% estimate after applying its margin of error (3.9%).

⁶ It appears that the MinnPost/St. Cloud poll codes "refusals" as "missing data" and then recalculates the percentage support for each major party candidate remaining responses. In particular, they surveyed 628 respondents, but the number of respondents from which the horserace percentages are based is 622. It appears that Rasmussen or Survey USA does not complete interviews with individuals who refuse to indicate a candidate preference; these polls are conducted by computers and, in general, only ask individuals about their candidate preference and then a few background questions.

⁷ H. Weisberg, *The Total Survey Error Approach: A Guide to the New Science of Survey Research* (University of Chicago Press, 2005), p.205.

⁸ H. Schuman and S. Presser, *Questions and Answers in Attitude Surveys: Experiments on Question Form, Wording, and Context* (Thousand Oaks, CA.: Sage Publications, 1996).

⁹ There is some research to suspect that question order can impact respondent comfort with answering questions -- L. Sigelman, "Question-order Effects on Presidential Popularity," *Public Opinion Quarterly* (1996, vol. 45), pp.199-207.

¹⁰ Survey USA asked 2 questions before the candidate preference question about voter registration and intent to vote; the Star Tribune began by asking 4 similar types of questions; and MinnPost/St. Cloud asked 6 questions about substantive political attitudes the most important problem facing the state.

¹¹ R. Groves, *Survey Errors and Survey Costs*, (New York: John Wiley & Sons, 1989); M. Callegaro, F. De Keulenaer, J. Krosnick, and R. Daves, "Interviewer effects in a RDD Telephone Pre-election Poll in Minneapolis 2001: An analysis of the effects of interviewer race and gender." Paper presented at the annual meeting of the American Association For Public Opinion Association, Miami Beach, FL, 2009. http://www.allacademic.com/meta/p17173_index.html.

¹² J. Krosnick, "Response Strategies for coping with the Cognitive Demands of Attitude measures in Surveys," *Applied Cognitive Psychology* (Vol. 5, 1991), pp.213-236; S. Sudman, N. Bradburn, and N. Schwartz, "Thinking About Answers: The Application of Cognitive Processes to Survey Methodology," (San Francisco: Jossey-Bass, 1996).

¹³ The calculation of what is known as the "cooperation rate" is defined by the lead professional polling association - American Association for Public Opinion Research -- as "the proportion of all cases interviewed of all eligible units ever contacted." See "Standard Definitions: Final Dispositions of Case Codes and Outcome rates for Surveys," p.4.

http://www.aapor.org/AM/Template.cfm?Section=Standard_Definitions&Template=/CM/ContentDisplay.cfm&ContentID=1819