Judging the accuracy of public opinion polls in referendums

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Assessing polling accuracy in issue elections?

• The problems:
  – In issue elections polls are typically privately conducted, designed for campaign purposes, and never publicly released.
  – Some types of questions in issue elections are seldom asked by publicly-related polls in candidate elections – for example, an “uninformed” heads-up question, then push-format questions, then an “informed” heads-up.
  – These are nonpartisan, down-ballot votes without an incumbent.
  – Few polls are conducted or publicly reported so one cannot compare timely poll results.
What’s an issue election?

• About half the states and most cities have issue elections, with issues placed on the ballot either by a legislature or council, or else by citizen signatures. These are commonly called measures, propositions, initiatives, or referendums.

• From the mid-1970s to the early 2000s the elections were often used by tobacco control advocates to raise taxes on tobacco or to limit public smoking.

• Many were hotly contested by the tobacco industry. All the elections here involved a contested election on a proposed tax hike or a public smoking restriction. 11 statewide, 4 large municipal. 9 won by tobacco control, 6 won by the tobacco industry.

• The tobacco companies/Tobacco Institute almost always outspent the tobacco control side and by an average ratio of 7.3-to-one.
Briefly: the data used here ...

- 15 tobacco control elections, 1978-2001
- 126 poll questions (described on the next slide)
- These polls were conducted for the tobacco industry and are available at [http://legacy.library.ucsf.edu](http://legacy.library.ucsf.edu)
- The elections are statewide or local elections on tax hikes or restrictions on public smoking.
- All elections involve a *pro*-tobacco control ballot issue (not a measure brought by the tobacco industry) and all are contested.
- ... a caveat: there are many other issue elections ...

5 types of poll questions

1. “uninformed” heads-up (baseline or tracking polls) – early in the survey, briefly describes the ballot issue and then asks favor/oppose

2. The “strongly/somewhat favor/oppose” uninformed heads-up

3. “ballot format” heads-up (baseline or tracking) – early in the survey reads the actual ballot wording or a close paraphrasing and then asks favor/oppose

4. “informed” heads-up -- near the end of the survey following several push-format questions, and then asks favor/oppose

5. Post-election “uninformed” heads-up
What is “accuracy” and “error”?

• Here, “accuracy” is the similarity between the poll percentage *for* the tobacco control position and the election outcome percentage of votes for the tobacco control side (or another election outcome comparison if so specified).

• “Error” is the difference between the poll percentage (for tobacco control) and the percentage voting for tobacco control in the election (or another election outcome comparison if so specified).

• *An example:* if a poll question reports that 60% favor a tax hike on cigarettes, and the actual vote in favor of the tax hike is 50%, then the “error” is 10%.

  • *A caveat:* this is not the margin of error...
By the way ... these are reasonably “predictable” elections

• Best-fit model for the percentage of votes received by the tobacco control side:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Stan.Error</th>
<th>Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>23.573</td>
<td>6.059</td>
<td>.001</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>-1.309</td>
<td>.517</td>
<td>.02</td>
</tr>
<tr>
<td>Media support</td>
<td>5.618</td>
<td>1.254</td>
<td>.000</td>
</tr>
<tr>
<td>% strong yes</td>
<td>.393</td>
<td>.119</td>
<td>.004</td>
</tr>
</tbody>
</table>

• (R-2=.677; Adj. R-2=.628)

• Not significant predictors: interest group support, days out, year of election, tax versus public smoking issue
% error over time (days out) in pre-election polls – the “uninformed” favor/oppose question

(% error for the tobacco control and the smoking side, also % DK, refused)
The determinants of error in pre-election "uninformed" heads-up questions

- A best-fit model to predict forecast error in the election results for the tobacco control side:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>Stan.Error</th>
<th>Signif.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>15.840</td>
<td>2.39</td>
<td>.000</td>
</tr>
<tr>
<td>Cash ratio</td>
<td>.235</td>
<td>.079</td>
<td>.004</td>
</tr>
<tr>
<td>Campaign underway</td>
<td>-7.451</td>
<td>1.434</td>
<td>.000</td>
</tr>
<tr>
<td>If a large city</td>
<td>-4.198</td>
<td>1.657</td>
<td>.014</td>
</tr>
</tbody>
</table>

(R-2= .41; Adj. R-2=.38)

- Not significant predictors: media or interest group support, days out, year of election, tax versus public smoking issue
Error in tobacco control elections versus presidential elections 1980-2000 (Gallup, iPoll)

(% error in winner’s margin by days until election)

... and a caveat: issue elections measure from registered voters but presidential election polls move from all voters to registered voters to likely voters.
Does a “strongly” favor/oppose question improve accuracy? No.

- Sometimes an uninformed heads-up also asks whether a favor/oppose opinion is “strongly” held.
- This format doesn’t improve accuracy. Average error for favor/oppose (only) format = 7.5%. Average error for the “strongly” format is 11% (both cf. to the tobacco control vote percentages). For the favor/oppose format, errors usually overestimate the election-day results, and for the “strongly” format the errors are usually underestimates.
- Simply averaging the two figures reduces the average error to 6.3% with a normal distribution of under- and over-estimates of the election day figures for the tobacco control side.
- This finding is not affected by the type of election (tax versus public smoking), days out, or cash spending ratio.
Does a “ballot format” question reduce the error in pre-election “uninformed” heads-up? No.

- Occasionally a pollster asked the short “uninformed” heads-up immediately followed by a follow-up question with the actual (or slightly paraphrased) ballot wording, then asked a “ballot format” heads-up question.
- **9% average shift** (for tobacco control) from the “uninformed” to the “ballot format” question ... (with an average increase of 7% for the pro-tobacco control side)
- **but ... the “ballot format” question actually performs 2.4% worse than the “uninformed” question** – that is, a 7.6% average error to the election results versus 5.2% for uninformed heads-up (again for the tobacco control side)
Here’s an example of these two formats:

• *The uninformed heads-up question* ...

One proposition that will be on the ballot is Proposition 10 which increases tobacco taxes by fifty cents a pack to fund childhood development programs - had you heard of this proposition or not? ... From what you’ve heard, would you vote YES or NO on proposition 10?

*versus the “ballot format” wording:*

Here is the official language of Proposition 10. It is a constitutional amendment concerning state and county early childhood development programs and an additional tobacco surtax. It creates a state commission to provide information and to formulate guidelines for establishing comprehensive early childhood development and smoking prevention programs. It creates county commissions to develop strategic plans for new programs and creates a trust fund for these programs. It raises an additional fifty cents per pack tax on cigarette distributors and an equivalent tax increase on other tobacco products. These funds are exempt from the Proposition ninety-eight requirement that dedicates a portion of general tax revenues to schools. The legislative analyst estimates it would result in seven hundred million dollars in increased revenues after the first year, decreasing gradually in subsequent years. It will also result in increased state tax revenues initially and a decrease of four million dollars afterwards. It will increase local government sales tax revenues by twelve million dollars. Finally, it will result in a reduction of thirty million dollars for the Proposition ninety-nine cigarette tax funding of certain health and resources programs. (IF CHOICE MADE ASK:) And do you feel strongly about that?) (IF UNDECIDED ASK:) And do you lean towards voting YES or towards voting NO?
Do push-format questions help reduce error in pre-election polls?* Not necessarily.

* always compared to the earlier “uninformed” question

**Average effect of push-format questions:**

- A drop in support for tobacco control = 5.3% avg.
- A reduction in don’t know/refused = 1.1% avg.
- ... but ...the average reduction in “error” = 0%.
- (The average number of push-format questions is 7 pro-tobacco control and 16 pro-smoking but with wide variations, often 2-to-1 or 3-to-1 or 4-to-1 anti-tobacco control).
More on push-format questions ...

• Push-format questions *almost always* reduce the pro-tobacco control percentage *except if* there are very few push format questions or if there are about the same number of pro and con questions.

• Generally, when the ratio of anti-to-pro tobacco control questions exceeds two-to-one, the forecasting accuracy does not improve. A push-format question ratio of 1-to-1 or 2-to-1 improves forecasting accuracy. However, there is a wide variation in the patterns.
How do post-election polls compare to the last pre-election polls?

- Average % DK plus refusal = 8.8%, range = 0 to 23%
- Mean lag post-election days: 8-12 days (up to 60 days out)
- Overestimates winner’s margin: 3/4ths of the time
- Mean % error in the last pre-election poll for the winner’s actual percentage in the election results = 7.3%.
- Mean % error post-election poll for the winner’s actual percentage = 4.3%.
- Mean % error in last pre-election poll for winner’s margin = 9.6% (avg. % DK, refused = 10%)
- Mean % post-election poll error for winner’s margin = 7.5% (with an avg. % DK, refused = 8.8%)
- (A caveat: post-election polls are commonly used to measure the impact of advertising, attitudes about the campaign or health issues, time of decision-making, and demographics...)

16
How do these post-election polls compare in accuracy to 1980-2000 *presidential* post-election polls? (Gallup, iPoll)

- In 1980-2000 presidential post-election polls the % DK plus refused is lower = 5% avg. (vs. 8.8% in tobacco control elections)
- In presidential post-election polls the average error in the winner’s vote percentage is 4.3% (the same as in tobacco control elections)
- Presidential post-election polls *overestimate* the winner’s percentage two-thirds of the time (versus 3/4ths of the time in tobacco control elections).
Five Conclusions?

1. “Uninformed” heads-up questions improve nearer to the election.
2. The “strongly” format doesn’t improve forecasting accuracy.
3. “Ballot format” questions don’t improve forecasting accuracy.
4. An “informed” heads-up question following push-format questions doesn’t necessarily improve forecasting accuracy. A ratio of up to 2:1 anti-to-pro questions was optimum for forecasting accuracy. Push format questions may be more useful for identifying the best campaign issues.
5. Post-election surveys perform fairly well in accuracy and are useful for other purposes.
Acknowledgments

• All survey data are available at http://legacy.library.ucsf.edu
• See http://ballotpedia.org for statewide tobacco control elections

• A few useful citations: