JOURNALIST BEST PRACTICES: PUBLISHING REPORTED POLITICAL SURVEYS

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ABSTRACT. The Salt Lake City press should adopt the best practice of not publishing election surveys where the underlying full study is not publicly distributed. Error in statistical reasoning is common in election related polling. Typically, journalistic misinterpretation of polls occur in two-person political races and involve marginal-or-error conclusions. A September 12th, 2018 early re-election poll for the Salt Lake mayoral race illustrates another common misinterpretation involving ranked, ordinal data. While the reported, but unpublished, survey was correctly interpreted by journalists as indicating that that voters are dissatisfied with the Salt Lake mayor's performance, journalists incorrectly concluded that "most Salt Lake City voters dont think Mayor Jackie Biskupski should get another term in office" (Salt Lake Tribune and UtahPolicy.com) or "56% of Salt Lake voters say Biskupski should be booted" (Deseret News)". This example illustrates the need for the press when engaging in data journalism to develop better quantitative reasoning skills and, as a best practice, to refuse to publish or to severely qualify survey results where the underlying poll-survey is not fully made available to the public online. Statistically, the survey results do not support the conclusion that a majority of voters think that Biskupski should not be reelected.

1. BACKGROUND

On September 12, 2018, Utahpolicy.com published a summary of the results a Dan Jones and Associates survey of 203 likely Salt Lake voters (Schott), and in its newsletter, the political commentators concluded that voters feel that "Biskupski does not deserve another term in office." The full text of the underlying study was not published, and the conclusions of the Utahpolicy.com article were quickly republished by the two major Salt Lake City newspapers, the Deseret News and Salt Lake Tribune (McKellar, Stevens).

Utahpolicy.com commissioned the survey for the purpose of determining Biskupski's chances in next year's 2019 mayoral election by extrapolating opinions from a sample of 203 likely voters to the population of actual voters. In the last 2015 mayoral election, approximately 39,000 Salt Lake City residents voted (Salt Lake County Clerk). The Utahpolicy.com article went on to summarize survey opinion results for smaller subgroups of the sample of 203, *e.g.* - Republicans, very-conservative voters, somewhat-liberal voters, *etc.* without publishing the number of voters in each subgroup.

The key limited result reported from the full study was a single ordered-category item (Uebersax) with a margin-of-error of 6.8%:

TABLE 1. Biskupski Retention Ordered Category Item: "Should Salt Lake City Mayor Jackie Biskupski be elected to another four-year term, or is it time to give someone new a chance to serve?"

Category	Order	Percent	Count
Don't know	0	9	18
Definitely elect someone new	1	29	59
Probably elect someone new	2	27	55
Probably reelect Biskupski	3	20	41
Definitely reelect Biskupski	4	14	28
Total		99	201

For this discussion, it is assumed that the missing two respondents of the 203 surveyed are excluded as "refused to respond". The missing 1 percent is from rounding.

In contrast to journalistic headlines, a University of Utah political science professor Matthew Burbank opined (as reported by the Salt Lake Tribune) that the survey shows "that there is some uneasiness among potential voters about the job that Mayor Biskupski" and that "the most recent poll numbers shouldnt be viewed as definitive" (Stevens *quoting* Burbank).

2. INCORRECT CONCLUSION THAT 56 PERCENT OF VOTERS REJECT THE MAYOR'S REELECTION

Statistically, the survey results do not support the conclusion that a majority of voters think that Biskupski should not be reelected.

While this early, exploratory political survey was designed to define the characteristics of likely voters, journalists promoted results as answering a binary yes-no election question: "If the mayoral election were held today, would you vote for Biskupski?" Readers are invited to sum two ordered categories and to conclude that 56% of voters would not vote to reelect the mayor with a margin-or-error of 6.8%. But this would be incorrect statistical interpretation. The seemingly overwhelming lead against the mayor in Table 1 do not support the proposition that voters would vote to remove her. This is because of the statistics of proportion estimates.

The reported margin-of-error of 6.8% will be familiar to students who have taken introductory statistics at the high-school of college level. It is a computation of proportional one-half of the length of a confidence interval of a proportion estimate of the mean of a binary yes-no question. The confidence interval reflects the range of possible mean responses if a sample is taken repeatedly. It is a measure of the accuracy of the survey results. As the sample size decreases, the accuracy of the mean of a sample of 201 voters decreases and the confidence interval and margin-of-error increases.

Three equations, familiar to introductory statistics course high-school and college students, are used to determine 1) the number of sampled voters (the sample size) needed to correctly predict their opinion 95% of the time reflected in repeated surveys of small samples of all voters, 2) the margin-of-error of average of the opinions in a sample, and 3) the confidence interval around the measured survey opinion:

$$(2.1) \qquad n = (\frac{z^*}{m})^2 p^*(1 - p^*) \; ; \text{ sample size before survey}$$

$$(2.2) \qquad \hat{m} = z^* \sqrt{\frac{\hat{p}(1 - \hat{p})}{n}} \; ; \text{ margin-of-error after survey.}$$

$$(2.3) \qquad \hat{p} \pm \sqrt{\frac{\hat{p}(1 - \hat{p})}{n}} \; ; \text{ confidence interval after survey; where,}$$

- p^* is the initial pre-survey estimate of the response proportion, usually 50%.
- $\hat{p}$ is response proportion found from the surveyed sample.

- n is the number of persons expected to be and actually surveyed.

- m is the desired pre-survey margin-of-error.
- $\hat{m}$ is the computed margin-of-error post-survey; and,
- z^* is the "z" statistic value, typically 1.960 for a 95% confidence interval.

But these margin-of-error and confidence-interval equations apply only to proportions from *binary* questions, and they *should not be used* when summing percentages of responses to ordered category items. The statistical method to apply the confidence interval or margin-of-error computations to ordered category items, such as those in the Salt Lake City early mayoral poll, is to consider each sub-item separately as independent binary questions. (Technically, a more complex variant of the needed sample size equation is used for responses in ordered category items, but it is not applied here for simplicity of explanation (Park).)

Applying Eq. 2.1, a sample size of 600 would have been needed to obtain a usual margin-of-error of 4%; but only 207 respondents would be needed at the 6.8% level. This about the number of responses actually collected, probably due to survey economic limitations. Applying Eq. 2.2, at reported margin-of-error of 6.8%, the corresponding confidence interval used in the report is found to be the usual 95%. Applying Eq. 2.3, we can determine the confidence interval around each proportion found for each of the mayoral survey's response categories (Table 2).

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TABLE 2. Confidence interval (95%) around mean responses in Table 1.

Category	Order	Lower Bound	Percents Mean	Upper Bound
Definitely elect someone new	1	23	29	36
Probably elect someone new	2	21	27	34
Probably reelect Biskupski	3	15	20	27
Definitely reelect Biskupski	4	10	14	20
Don't know	0	5	9	14

Graphically, these confidence intervals are shown in Figure 1, below.

Again, these confidence intervals imply that if 203 likely voters are repeated resampled, their responses are *equally likely* to appear anywhere along the confidence interval bars within each category. It is not difficult to see that there are many combinations of these categories where the mayor might be re-elected. Thus, the survey results do not support the journalistic conclusion that a majority of voters think that Biskupski should not be reelected.

It is for this reason that in multi-candidate primary runoffs and elections, supplemental binary poll questions are used that pair each combination of candidates in two-person contests. For example, in a three-way race between Trump, Clinton
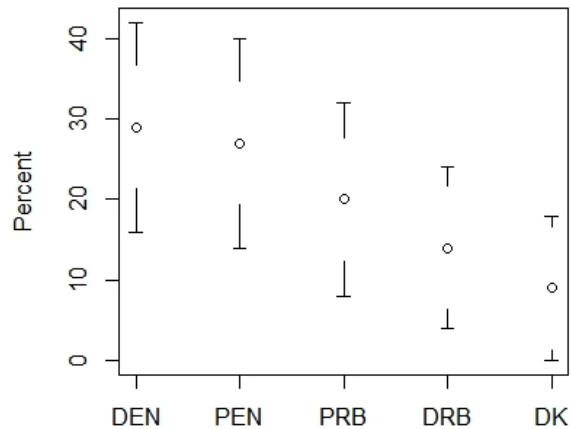
Source: Dan Jones and Assoc. poll per Tables 1 and 2. DEN=Definitely elect someone new; PEN=Probably elect someone new; PRB=Probably reelect Biskupski; DRB=Definitely reelect Biskupski; DK=Undecided

FIGURE 1. Response proportions and confidence intervals for reelection poll

and Sanders, permutations of yes-no questions are asked: "If the election were held today, how would you vote in a race between: 1) Trump vs. Clinton, 2) Trump vs. Sanders, and 3) Hillary vs. Sanders".

There is also a definition ambiguity in the survey item that makes interpreting the survey result as a binary 56% against reelection questionable. The categories "probably elect someone else" and "probably reelect Biskupsk" mean what they say, and 47% of respondents chose those categories. "Probably" is defined by Websters as "insofar as seems reasonably true, factual, or to be expected: without much doubt." Similarly, the Cambridge Dictionary defines "probably" as "used to mean that something is very likely." "Probably" means "very likely" but it does not mean "definitely". Some respondents who are just leaning away from voting for the mayor in a re-election may put themselves in the "probably elect someone else" category, but their actual voting behavior may be different. The opposite is true for respondents in the "probably reelect Biskupski" category. Categorical variables do no capture such subtleties. During an actual election, 47% of the respondents may vote to re-elect the mayor or may not vote to re-elect mayor. Based on the survey results, a re-election vote might be 29% against and 61% for, or it might be 14% for and 76% against, depending upon how respondents subjectively interpreted "probably". This item ambiguity weighs against giving the poll result a binary 56% against interpretation.

3. Incorrect conclusions about smaller subgroups such as by gender

Next, the Dan Jones and Associates report makes assessments of opinions for smaller sub-groups of voters. For example, with respect to voting preferences by gender, the pollster reported that 61% of men and 51% of women would not vote for Biskupski's re-election - a 10% difference. Utahpolicy.com concluded that this evidenced no voting preference difference by gender. A majority of both genders opined that they would not reelect the mayor. The implication is that there is no "gender gap" with respect to voters not-reelecting Biskupski.

But the number of men and women in study were not publicly reported. Based on Utah voting by gender in the 2016 Utah presidential, congressional and gubernatorial elections, I assume here that by gender 48% (n=97) of men and 52% (n=106) of women participated in the September 2018 mayoral survey (CNN).

Since the opinion estimates by gender were based on a smaller sample sizes (about 100 within each group, verses 203 in Table 1), the margin-of-error increases to about 10% (Eq. 2.2). What are the 95% confidence intervals for these smaller subgroups broken out by gender (Eq. 2.3)?

Table 3. Biskupski reelection opposition by gender, 95% percent confidence intervals

Category	N	Lower Bound	Percents Mean	Upper Bound
Women	106	41	51	61
Men	97	50	61	70

Source: Dan Jones and Assoc. poll per Table 1.

When considering confidence intervals based on the small size of the subgroups, a different picture emerges. It is possible that women would vote differently from

men (the 41% to 50% interval for women), and a gender gap *may exist*. The insufficiently sized subgroups problem is common in political polling (Mercer). This has occurred in at least one prior study by that organization. Based on the 2018 Dan Jones survey, local journalists reported other demographic subgroups, but those conclusions are likely to also contain too few respondents to have a statistical validity as to likely voter opinions for those subgroups.

The response of women voters in the instant survey illustrates the classic margin-of-error problem for two-way races. In that reasoning error, candidate A has a 5% lead - 53% to 47% in an election contest with a 5% margin of error. But based on the pre-election poll, this means that candidate A may receive between 58% and 48% of the vote on election day. There is still an equal probability of losing the election, and ethical journalists would, pre-election, declare the contest "too close to call" (Mercer). Often they do not and pre-voting, the election is called for candidate A (*id*).

4. What does the reelection survey show?

The Dan Jones and Associates polls was probably designed to obtain demographic information about likely-voter preferences and characteristics. But another type of social research survey seeks to probe what concepts that people believe. A typical example concept might be "Do you feel that Mayor Biskupski is doing a good job?" To probe just questions, surveyors use Likert-like questions. Likert questions, named after its inventor psychologist Rensis Likert, are a series a several questions where responses are given as selecting between a scale of "strongly disagree" to "strongly agree". Each response is paired with an interval value, *i.e.* - 1,2,3,4,5 (*see* Table 1). We have all taken such surveys. If overall responses to a series of Likert questions probing the same concept are similar, then a researcher can be reasonably certain a person holds that belief (Wrench *et al*). Example Likert questions for a mayoral poll might be, "Do you think the mayor is doing a good job for you?"; "Is the mayor an effective politician?", or "If an election were held today, do you feel the mayor should be reelected?".

Whether the Dan Jones and Associates was a simple demographics poll or a more complicated Likert poll is not known. The full report was never published. Utahpolicy.com has only summarized limited information from the full text of the poll's report.

The best light that the poll and the 56% not-re-elect estimate can be taken is the likely-voters' responses are an expression of disapproval. The 56% response indicates voter dissatisfaction with the mayor's overall performance. The weighted mean of the ordinal poll question (Table 1, second column) is 1.9 - again, indicating likely voters give the mayor a weak performance grade. As University of Utah professor Matthew Burbank pointed out, the poll "is certainly not in any way kind of an indication that shes doomed . . ." (Stevens *quoting* Burbank). One reason for Burbank's expert opinion is simple: the survey's statistics do not support that conclusion that the mayor would not be reelected; the statistical estimates support that voters are dissatisfied.

5. Journalistic best practices

This example illustrates the need for the press to refuse to publish or to severely qualify survey results where the underlying poll-survey is not fully made available

to the public online. It is only through the public disclosure of the full underlying report that the public can determine whether there are design, sampling errors, or interpretation errors that invalidate stated conclusions.

There are competing commercial interests against poll report publication. Professional pollsters do commissioned work, and the party that pays for a poll may not want to release all of the details that they paid for. Journalists and the public want the full details so expert claims made can be verified. Disclosure is increasingly important in our math-centric culture. Our society values verifying our intuitions with surveys and-or complicated mathematical models before making policy decisions. Common sense may tell us that Salt Lake City likely voters are dissatisfied with the mayor's performance, given the difficult issues that she has faced since 2016. Common sense may make us expect that conservative males will be disinclined to support a lesbian mayor and to expect a gender voting gap. The purpose of surveying is to test whether those expected beliefs are shared or are prejudices. Giving journalistic approval to unreasonable interpretations of expert surveys confuses and does not clarify the matter.

The journalistic imprimatur that a survey is statistically accurate by including statement that it has a 6.8% margin of error gives the poll more weight in a public reader's mind. In the instant case, that imprimatur was wrongly given.

Journalistic best practices for reporting on surveys might include: 1) insisting that all survey reports be publicly posted online as a condition to a news outlet reporting them, and 2) where a pollster or commissioning party refuses to post the full report, to include a disclaimer that the assertion of statistical validity by a source of the reported poll results could not be confirmed or validated. Such practices will reduce occurrences of journalists misreporting statistics by giving polls the imprimatur of scientific validity that do not deserve it. This example also illustrates the need for the press to develop better statistical reasoning skills when engaging in data journalism.

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