

From January 1993 through February 1995, Prodigy, an on-line service provider with, at that time, over 1.5 million adult subscribers, conducted a series of 84 e-mail surveys at semi-monthly, then weekly intervals, measuring political approval of the President and Congress. These e-mail surveys used stratified probability samples of the adult Prodigy membership and returns were further weighted on age, gender and party identification to match those proportions in the total U.S. population. The results showed remarkable similarity in variation over time when compared to periodically published presidential popularity polls from Gallup and others. Some of the findings of this experiment were presented to AAPOR at the 1995 conference <sup>1</sup>.

At the same time, Prodigy, like many other media outlets, conducts frequent "on-line polls" asking their audience to answer questions on current issues of interest. Being quite popular with the membership, these are heavily promoted on the service to increase usage, but since any respondents are entirely self-selected, such polls have never been considered to have much more than an entertainment value. An important distinction of the Prodigy on-line polls is that, because each subscriber logs on using a unique identifier, the system can be programmed to discard multiple entries from any one member, keeping only the first or the last of these. Thus, unlike most of these self-selected polls, any one individual cannot bias the results by answering many times.

In 1994, the Prodigy service undertook an ambitious project which included providing real-time results on-line on election night for all state-wide races. To promote this, they began running on-line polls a week before the election asking members a number of political questions, including for whom they would vote in state-wide races. As Prodigy subscriber profiles include the state of residence, it was possible to customize the data entry screens dynamically so that candidates for governor or senator in a respondent's state were listed by name.

Responses to this on-line poll were collected for off-line processing for five state-wide races that were considered to be of interest to a national audience. These were treated using essentially the same weighting scheme as for the e-mail experiment, except that claimed party registration was matched to the 1992 presidential vote in each state because state level party registration estimates were not available. The results were posted on the Prodigy service on the eve of the election, Monday, November 7, 1994.

It was known from the e-mail surveys that, while the political opinions of the Prodigy subscriber population seemed to shift in synchronization with those of the general population, there appeared to be a consistent and substantial conservative offset in the actual weighted numbers. We were somewhat surprised, therefore, when the results of this thoroughly non-scientific sampling process exhibited a remarkable level of accuracy when compared with published polling data from most highly regarded sources.

Table 1 displays the results of those final pre-election polls for the five races involved that appeared after October 31 1994 in either The Polling Report or the Weekly Hotline<sup>2</sup> along with the weighted results of the corresponding Prodigy on-line polls just described.

However, the order has been deliberately scrambled: the names and dates of the polls are listed in alphabetical order, while the published results are shown in order of increasing absolute deviation from the margin of victory in the election itself.

Before proceeding any further, readers are asked to attempt to determine on their own which of the poll results for each race were obtained from the Prodigy on-line poll.

**TABLE 1**

Table 2 displays the same information, still ranked by increasing absolute deviation from the margin of victory, but the identity of each poll is paired with its results.

**TABLE 2**

Note that in three of the races (NY Governor, TX Governor and CA Senate), the Prodigy on-line poll came closest of all to the eventual election results. In the other two races (FL Governor and VA Senate), the Prodigy on-line poll was the least accurate of those compared, although the estimates produced remain quite respectable nonetheless.

One might be tempted to say that this outcome was fortuitous, but similar results from other on-line polling tests conducted on the Prodigy service by Maisel during the 1992 presidential election and by Maisel and Werner in early 1993 comparing e-mail and on-line polling would seem to indicate that this was not an aberration.

Table 3 shows unweighted Prodigy results. This is more like what would expect from self-selected surveys on the Internet because of the inability to project to demographic or other characteristics.

**TABLE 3**

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<sup>1</sup> Jan Werner, Richard Maisel and Katherine Robinson (1995) "*The Prodigy Experiment in Using e-mail for Tracking Public Opinion.*" Proceedings of the Section on Survey Research Methods, American Statistical Association, 981-985.

<sup>2</sup> Thanks to Nick Panagakis of the *Market Shares Corporation* for providing this information and for permission to include it in this presentation.

Table 1

Can you match the 1994 pre-election polls listed on the left-hand side with their published results listed on the right-hand side?

| Election/Final published poll<br>(listed in alphabetical order - these are NOT<br>matched with the results at right) |                |   |   | Democrat                | Republican               | Difference<br>%D-%R | Absolute<br>error |
|--|----------------|---|---|-------------------------|--------------------------|---------------------|-------------------|
| <b><u>NY Governor</u></b>  |                |   |   | <b><u>Cuomo</u></b>     | <b><u>Pataki</u></b>     |                     |                   |
| Election results   |                |   |   | 45%                     | 49%                      | -4%                 |                   |
| Gallup/Newsday-WABC  | Oct. 25-26     | A | 1 | 44%                     | 47%                      | -3%                 | 1%                |
| Harris/Daily News/WNBC   | Nov. 4-6       | B | 2 | 44%                     | 45%                      | -1%                 | 3%                |
| Marist Institute   | Nov. 7         | C | 3 | 40%                     | 38%                      | 2%                  | 6%                |
| NY Post/Fox TV   | Oct. 29-Nov. 1 | D | 4 | 46%                     | 40%                      | 6%                  | 10%               |
| Prodigy  | Nov. 1-7       | E | 5 | 46%                     | 38%                      | 8%                  | 12%               |
| WCBS-TV/NY Times   | Oct. 26-29     | F | 6 | 45%                     | 35%                      | 10%                 | 14%               |
| <b><u>TX Governor</u></b>  |                |   |   | <b><u>Richards</u></b>  | <b><u>G.W.Bush</u></b>   |                     |                   |
| Election results   |                |   |   | 46%                     | 53%                      | -7%                 |                   |
| Harte-Hanks  | Oct. 6-15      | A | 1 | 45%                     | 55%                      | -10%                | 3%                |
| Houston Post   | Oct. 22-27     | B | 2 | 44%                     | 48%                      | -4%                 | 3%                |
| KPRC-TV  | Oct. 31-Nov. 2 | C | 3 | 44%                     | 45%                      | -1%                 | 6%                |
| Prodigy  | Nov. 1-7       | D | 4 | 47%                     | 44%                      | 3%                  | 10%               |
| <b><u>FL Governor</u></b>  |                |   |   | <b><u>Chiles</u></b>    | <b><u>Jeb Bush</u></b>   |                     |                   |
| Election results   |                |   |   | 51%                     | 49%                      | 2%                  |                   |
| Assoc.Ind.Florida  | Nov. 1-2       | A | 1 | 48%                     | 45%                      | 3%                  | 1%                |
| Kitchens/Powell  | Oct. 18-20     | B | 2 | 48%                     | 43%                      | 5%                  | 3%                |
| Orlando Sentinel   | Oct. 26-27     | C | 3 | 50%                     | 41%                      | 9%                  | 7%                |
| Prodigy  | Nov. 1-7       | D | 4 | 47%                     | 53%                      | -6%                 | 8%                |
| <b><u>CA Senate</u></b>  |                |   |   | <b><u>Feinstein</u></b> | <b><u>Huffington</u></b> |                     |                   |
| Election results   |                |   |   | 47%                     | 45%                      | 2%                  |                   |
| Field Poll   | Oct. 21-30     | A | 1 | 51%                     | 49%                      | 2%                  | 0%                |
| KCAL-TV  | Oct. 28-31     | B | 2 | 48%                     | 45%                      | 3%                  | 1%                |
| LA Times   | Oct. 22-25     | C | 3 | 48%                     | 42%                      | 6%                  | 4%                |
| Prodigy  | Nov. 1-7       | D | 4 | 45%                     | 39%                      | 6%                  | 4%                |
| SF Examiner  | Oct. 17-19     | E | 5 | 48%                     | 38%                      | 10%                 | 8%                |
| <b><u>VA Senate</u></b>  |                |   |   | <b><u>Robb</u></b>      | <b><u>North</u></b>      |                     |                   |
| Election results   |                |   |   | 46%                     | 43%                      | 3%                  |                   |
| Fairfax Journal  | Nov. 1-2       | A | 1 | 38%                     | 36%                      | 2%                  | 1%                |
| Prodigy  | Nov. 1-7       | B | 2 | 37%                     | 36%                      | 1%                  | 2%                |
| Richmond Times-Dispatch  | Oct. 17-20     | C | 3 | 32%                     | 33%                      | -1%                 | 3%                |
| VCU  | Oct. 30-Nov. 2 | D | 4 | 43%                     | 47%                      | -4%                 | 7%                |

43%

Table 2

| Election/Final published poll |                 | Democrat                | Republican               | Difference %D-%R | Absolute error |
|-------------------------------|-----------------|-------------------------|--------------------------|------------------|----------------|
| <b><u>NY Governor</u></b>     |                 | <b><u>Cuomo</u></b>     | <b><u>Pataki</u></b>     |                  |                |
| Election results              |                 | 45%                     | 49%                      | -4%              |                |
| <b>Prodigy</b>                | <b>Nov. 1-7</b> | <b>44%</b>              | <b>47%</b>               | <b>-3%</b>       | <b>1%</b>      |
| Marist Institute              | Nov. 7          | 44%                     | 45%                      | -1%              | 3%             |
| Gallup/Newsday-WABC           | Oct. 25-26      | 40%                     | 38%                      | 2%               | 6%             |
| Harris/Daily News/WNBC        | Nov. 4-6        | 46%                     | 40%                      | 6%               | 10%            |
| WCBS-TV/NY Times              | Oct. 26-29      | 46%                     | 38%                      | 8%               | 12%            |
| NY Post/Fox TV                | Oct. 29-Nov. 1  | 45%                     | 35%                      | 10%              | 14%            |
| <b><u>TX Governor</u></b>     |                 | <b><u>Richards</u></b>  | <b><u>G.W.Bush</u></b>   |                  |                |
| Election results              |                 | 46%                     | 53%                      | -7%              |                |
| <b>Prodigy</b>                | <b>Nov. 1-7</b> | <b>45%</b>              | <b>55%</b>               | <b>-10%</b>      | <b>3%</b>      |
| KPRC-TV                       | Oct. 31-Nov. 2  | 44%                     | 48%                      | -4%              | 3%             |
| Harte-Hanks                   | Oct. 6-15       | 44%                     | 45%                      | -1%              | 6%             |
| Houston Post                  | Oct. 22-27      | 47%                     | 44%                      | 3%               | 10%            |
| <b><u>FL Governor</u></b>     |                 | <b><u>Chiles</u></b>    | <b><u>Jeb Bush</u></b>   |                  |                |
| Election results              |                 | 51%                     | 49%                      | 2%               |                |
| Orlando Sentinel              | Oct. 26-27      | 48%                     | 45%                      | 3%               | 1%             |
| Assoc.Ind.Florida             | Nov. 1-2        | 48%                     | 43%                      | 5%               | 3%             |
| Kitchens/Powell               | Oct. 18-20      | 50%                     | 41%                      | 9%               | 7%             |
| <b>Prodigy</b>                | <b>Nov. 1-7</b> | <b>47%</b>              | <b>53%</b>               | <b>-6%</b>       | <b>8%</b>      |
| <b><u>CA Senate</u></b>       |                 | <b><u>Feinstein</u></b> | <b><u>Huffington</u></b> |                  |                |
| Election results              |                 | 47%                     | 45%                      | 2%               |                |
| <b>Prodigy</b>                | <b>Nov. 1-7</b> | <b>51%</b>              | <b>49%</b>               | <b>2%</b>        | <b>0%</b>      |
| LA Times                      | Oct. 22-25      | 48%                     | 45%                      | 3%               | 1%             |
| SF Examiner                   | Oct. 17-19      | 48%                     | 42%                      | 6%               | 4%             |
| Field Poll                    | Oct. 21-30      | 45%                     | 39%                      | 6%               | 4%             |
| KCAL-TV                       | Oct. 28-31      | 48%                     | 38%                      | 10%              | 8%             |
| <b><u>VA Senate</u></b>       |                 | <b><u>Robb</u></b>      | <b><u>North</u></b>      |                  |                |
| Election results              |                 | 46%                     | 43%                      | 3%               |                |
| VCU                           | Oct. 30-Nov. 2  | 38%                     | 36%                      | 2%               | 1%             |
| Fairfax Journal               | Nov. 1-2        | 37%                     | 36%                      | 1%               | 2%             |
| Richmond Times-Dispatch       | Oct. 17-20      | 32%                     | 33%                      | -1%              | 3%             |
| <b>Prodigy</b>                | <b>Nov. 1-7</b> | <b>43%</b>              | <b>47%</b>               | <b>-4%</b>       | <b>7%</b>      |

Table 3

| Election/Final published poll |                 | Democrat                | Republican               | Difference %D-%R | Absolute error |
|-------------------------------|-----------------|-------------------------|--------------------------|------------------|----------------|
| <b><u>NY Governor</u></b>     |                 | <b><u>Cuomo</u></b>     | <b><u>Pataki</u></b>     |                  |                |
| Election results              |                 | 45%                     | 49%                      | -4%              |                |
| <b>Prodigy weighted</b>       | <b>Nov. 1-7</b> | <b>44%</b>              | <b>47%</b>               | <b>-3%</b>       | <b>1%</b>      |
| Marist Institute              | Nov. 7          | 44%                     | 45%                      | -1%              | 3%             |
| Gallup/Newsday-WABC           | Oct. 25-26      | 40%                     | 38%                      | 2%               | 6%             |
| Harris/Daily News/WNBC        | Nov. 4-6        | 46%                     | 40%                      | 6%               | 10%            |
| WCBS-TV/NY Times              | Oct. 26-29      | 46%                     | 38%                      | 8%               | 12%            |
| NY Post/Fox TV                | Oct. 29-Nov. 1  | 45%                     | 35%                      | 10%              | 14%            |
| <b>Prodigy unweighted</b>     | <b>Nov. 1-7</b> | <b>34%</b>              | <b>57%</b>               | <b>-23%</b>      | <b>19%</b>     |
| <b><u>TX Governor</u></b>     |                 | <b><u>Richards</u></b>  | <b><u>G.W.Bush</u></b>   |                  |                |
| Election results              |                 | 46%                     | 53%                      | -7%              |                |
| <b>Prodigy weighted</b>       | <b>Nov. 1-7</b> | <b>45%</b>              | <b>55%</b>               | <b>-10%</b>      | <b>3%</b>      |
| KPRC-TV                       | Oct. 31-Nov. 2  | 44%                     | 48%                      | -4%              | 3%             |
| Harte-Hanks                   | Oct. 6-15       | 44%                     | 45%                      | -1%              | 6%             |
| Houston Post                  | Oct. 22-27      | 47%                     | 44%                      | 3%               | 10%            |
| <b>Prodigy unweighted</b>     | <b>Nov. 1-7</b> | <b>29%</b>              | <b>71%</b>               | <b>-42%</b>      | <b>35%</b>     |
| <b><u>FL Governor</u></b>     |                 | <b><u>Chiles</u></b>    | <b><u>Jeb Bush</u></b>   |                  |                |
| Election results              |                 | 51%                     | 49%                      | 2%               |                |
| Orlando Sentinel              | Oct. 26-27      | 48%                     | 45%                      | 3%               | 1%             |
| Assoc.Ind.Florida             | Nov. 1-2        | 48%                     | 43%                      | 5%               | 3%             |
| Kitchens/Powell               | Oct. 18-20      | 50%                     | 41%                      | 9%               | 7%             |
| <b>Prodigy weighted</b>       | <b>Nov. 1-7</b> | <b>47%</b>              | <b>53%</b>               | <b>-6%</b>       | <b>8%</b>      |
| <b>Prodigy unweighted</b>     | <b>Nov. 1-7</b> | <b>37%</b>              | <b>63%</b>               | <b>-26%</b>      | <b>28%</b>     |
| <b><u>CA Senate</u></b>       |                 | <b><u>Feinstein</u></b> | <b><u>Huffington</u></b> |                  |                |
| Election results              |                 | 47%                     | 45%                      | 2%               |                |
| <b>Prodigy weighted</b>       | <b>Nov. 1-7</b> | <b>51%</b>              | <b>49%</b>               | <b>2%</b>        | <b>0%</b>      |
| LA Times                      | Oct. 22-25      | 48%                     | 45%                      | 3%               | 1%             |
| SF Examiner                   | Oct. 17-19      | 48%                     | 42%                      | 6%               | 4%             |
| Field Poll                    | Oct. 21-30      | 45%                     | 39%                      | 6%               | 4%             |
| KCAL-TV                       | Oct. 28-31      | 48%                     | 38%                      | 10%              | 8%             |
| <b>Prodigy unweighted</b>     | <b>Nov. 1-7</b> | <b>38%</b>              | <b>62%</b>               | <b>-24%</b>      | <b>26%</b>     |
| <b><u>VA Senate</u></b>       |                 | <b><u>Robb</u></b>      | <b><u>North</u></b>      |                  |                |
| Election results              |                 | 46%                     | 43%                      | 3%               |                |
| VCU                           | Oct. 30-Nov. 2  | 38%                     | 36%                      | 2%               | 1%             |
| Fairfax Journal               | Nov. 1-2        | 37%                     | 36%                      | 1%               | 2%             |
| Richmond Times-Dispatch       | Oct. 17-20      | 32%                     | 33%                      | -1%              | 3%             |
| <b>Prodigy weighted</b>       | <b>Nov. 1-7</b> | <b>43%</b>              | <b>47%</b>               | <b>-4%</b>       | <b>7%</b>      |
| <b>Prodigy unweighted</b>     | <b>Nov. 1-7</b> | <b>33%</b>              | <b>54%</b>               | <b>-21%</b>      | <b>24%</b>     |