Survey Weighting: Weight, Weight, Don't Tell Me

Posted by Jeffrey Henning on Fri, May 07, 2010

Weighting survey responses is designed to remove bias from a survey sample and make the results better project the target population. As a simple case, imagine that you survey 100 Americans ages 15 to 64: 60 males and 40 females. For that age range, it should be 50/50. To correct for this, in your analysis you weight each male's answers to be worth 0.83 of a response and each female's answers to be worth 1.5 1.25 responses. Now the survey results should, in theory, better reflect the target population.

That's a simple example, weighting only on sex. Is there a universal weighting system--a common set of attributes-that you should use in all your survey research? Some of the alternatives:

- **Demographic weighted surveys** A common approach is to weight demographic cells to reflect the composition of the target audience, often using cells comprised of age, gender and region. However, <u>David Yeager and Jon Krosnick</u> determined that demographically weighting non-probability Internet samples to known population values did not consistently produce more representative results. Indeed, in some cases, such weighting made the results dramatically less representative.
- **Demographic and attitudinal weighted surveys** In an effort to improve on demographic weighting, some researchers have also used attitudinal questions in their weighting functions, but there has been no academic validation of this technique.
- Propensity weighted surveys A proprietary approach of Harris Interactive uses propensity score weighting, which adjusts for the likelihood of respondents to be online based on their demographics.
- Non-parametric weighted surveys When demographic weighting of surveys doesn't calibrate responses with external measures, non-parametric weighting appears to. Brian Fine of ORU, in a paper for ESOMAR ORC, demonstrated that CART analysis could be used to model representative results by modeling the dependent variable as panelist source. This technique has not yet been independently validated but appears to allow a survey sampled from multiple different panels to be adjusted to be represented and is one possible solution for sample blending.

Let's step back from the theory for a moment. What are the seven things that, if I knew about you, would enable me to predict your other answers? Or, if that is too much of an overstatement, what are the seven attributes about you that would enable me to group you with other people who were most likely to give the same answers as you?

When framed this way, it's clear that there is no universal set of weighting factors applicable to all research. In fact, the recent <u>AAPOR report on commercial online panels</u> concluded that the academic literature has yet to validate a weighting scheme for general market research. Only a few narrow domains, such as political polling, have demonstrated greater accuracy from using weighting.

Developing and validating proprietary weighting schemes is a great way for research agencies to differentiate themselves from one another. Creating weighting schemes very specific to the industries and markets they most frequently research makes a lot of sense.

Do It Yourself survey researchers, on the other hand, are more likely to apply weights mistakenly or to draw false conclusions. A common mistake is weighting individual respondents to represent 2 or more respondents in the overall sample. Better to be in the situation where you are weighting respondents to represent fewer: this occurs when you have disproportionately large sample sizes for important subgroups and need to project to the overall population.

Unfortunately, too often weighting is used to make us feel better about a sample that was not particularly representative. Weighting is designed to correct for bias in samples; better to eliminate as much sampling bias as possible. Using a probability sample remains the best way to field surveys that can be projected to your target audience.

Tags: Survey Analysis

Comments

Shouldn't that be 1.25 for each female response? Unless you like the female answers better.. Posted @ Tuesday, May 11, 2010 11:27 AM by Eric Verhoeven You are right! With 60 male respondents and 40 female respondents, I mixed two approaches: you could weight female responses 1.5, in which case you would not need to weight male responses at all. If you weight both to be 50 respondents each, then you need to use 1.25. I have amended the example. Posted @ Saturday, May 22, 2010 5:01 PM by Jeffrey Henning But how did you get the 1.25 and the 0.83? what did you calculate?

I don't get it...

sorry Posted @ Friday, September 03, 2010 3:41 AM by Annette ok, I got it... Posted @ Friday, September 03, 2010 4:01 AM by Annette