Memo To Subscribers of Roy Morgan Readership Surveys

On Calculation of Pairs for Weekly Publications

As you know, we are now using a new method of measuring weekly publications.

Under the new system, the following applies:

If a respondent has read two issues of a weekly publication for the first time in a given week, then for "single issue readership" calculations, we give that person a weighting of 2. That is because for each such occurrence, there is an equal (matching) chance that we would have recorded that person as having read no issues for the first time that week.

If a respondent has read three issues of a weekly publication for the first time in a given week, then for "single issue readership" calculations, we give that person a weighting of 3. That is because for each such occurrence, there should be three matching occurrences or weeks where such a person would have been recorded as having read no issues for the first time in that week:

When we extend this system to determine the combined readership of two publications, we are faced with 16 possible combinations, viz.:

(0,0), (0,1), (1,0), (1,1), (0,2), (2,0), (1,2), (2,2), (0,3), (3,0), (1,3), (3,1), (2,3), (3,2), (3,3)

The following describes each combination:

(0,0)
Clearly this must given a zero weight in the combined readership calculation.

(1,0), (1,1), (1,2), (1,3)
These must all be given a weighting of 1, because, if the respondent is regularly reading the first publication, his or her pattern of readership of the second is of no consequence.

(0,1), (2,1), (3,1)
These must similarly be given a weighting of 1, because, if the respondent is regularly reading the second publication, his or her pattern of readership of the first is of no consequence.

(0,2), (0,3)
There is no choice other than to give these weightings of 2 and 3 respectively, because at this stage we must assume that the respondent is not a reader of the first publication.

(2,0), (3,0)
In exactly the same way, we must also give these weightings of 2 and 3 respectively, because we at this stage must assume that the respondent is not a reader of the second publication.

../2
(2,2), (2,3), (3,2), (3,3)

Herein lies the problem!

Case (a):

If the times when the respondents read the first publication are 100% correlated with the times when they read the second publication, then the weightings should be 2, 2.5, 2.5 and 3 respectively: i.e. the same as if there were only one publication. This would be the case, for example, if people batched all their reading material over several weeks, and then read it all in one session.

Case (b):

On the other hand, if the times when the respondents read the first publication are completely independent of (and bear no relation to) the times when they read the second, then (to be consistent with the above) our weightings should be 0, -1, -1, -3 respectively.

Illustration of why this is so: Under the independence assumption, 100 readers of both publications who read both of those two issues at a time would be distributed:

25 (0,0)
25 (0,2)
25 (2,0)
25 (2,2)

Using the rules above, we would give the first 25 respondents zero weightings, and the next 50 a weighting of 2. As the total readership is 100, we must give the last 25 zero weighting.

The answer clearly lies somewhere between Case (a) and Case (b).

i.e. We should give (2,2) a weighting between 0 & 2, We should give (2,3) & (3,2) weightings between -1 & 2.5, & We should give (3,3) a weighting between -3 & 3.

Our policy is to give each a weighting of 1.

Aside from the fact that it lies very nearly midway between the two extremes, this policy has the following advantage over all other policies:

It is the only policy which enables a consistent handling of 3 or more publications.

Using this policy for three publications (A, B, C for example) it does not matter whether we consider A, B and then C, or A, C and then B, or B, C and then A, we will get the same answer (weighting) no matter which order we take.

Notes: (1) There are actually relatively few cases involving more than one issue being read for the first time in a week.

(2) Account has been taken above of the two cases (a) and (b). There is also a third possibility (c), in which the readership patterns of the two publications are 100% negatively correlated. In that circumstance, the combinations (2,2), (2,3), (3,2) and (3,3) would be impossible, and we would have overweighted the (0,2), (2,0), (0,3) & (3,0) cases. In practice, such readers are probably extremely rare; the truth still lies somewhere between (a) and (b).

(3) The above considerations apply to weekly publications. The problem does not exist for monthly or daily publications, as only single issue readership questions are asked for them.

If you have any queries, please call me or George Rennie (03) 417-5822, who is a consultant to our Company.

With kind regards,