

MRDC Software Information Sheet

HOW RIM WEIGHTING WORKS

1. Scope

The purpose of this article is to explain how rim weighting works. Before you read this article, you should be familiar with the principles of target weighting. If you are not, you should read the appendix which explains what target weighing is first.

The article only explains how rim weighting works and some basic checks that you should apply.

If you want a working model in Excel, please email phil.hearn@mrdcsoftware.com and you can receive our free rim weighting calculator.

2. What is rim weighting?

Rim weighting is special form of a target weighting. It can be a practical tool to use when you have targets (or populations) to which you wish your data for 2 or more variables, but not targets for the interlocking cells for these 2 or more variables.

For example, you may know that your target sample should be:

Males – 50%
Females – 50%

16-34 – 40%
35+ - 60%

This is known as ‘rim weighting targets’. You may have more than 2 variables, which is where rim weighting is likely to be your chosen method. However, read the notes in section 5, as you should see this as a panacea for all your sampling errors.

If you do not know the percentages or figures for the interlocking cells, you will not be able to use ‘standard’ target weighing. To use ‘standard’ target weighting, you would need to know the following, for example:

Males 16-34 – 15%
Males 35+ - 35%
Females 16-34 – 25%
Females 35+ - 25%

Generally, the targets for interlocking cells are better than rim weighting. However, where there a number of variables comprising the targets or where many items within each variable, ‘standard’ target weighting may be inappropriate or impossible to apply.

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3. How does rim weighting working?

Rim weighting works by what is known as an iterative target weighting process. In other words, the software (assuming it is capable of performing rim weighting) will calculate targets for the first rim. In the example, above, this would apply weighting factors that would achieve 50% males and 50% females.

After applying this weighting factor, it is high improbable that the targets of 40% for 16-34 year olds and 60% for 35+ year olds would be achieved.

The software would, therefore, calculate a multiplicative weight that would adjust the data so that 40% for 16-34 year olds and 60% for 35+ year olds is achieved. The application of this multiplicative factor would almost certainly mean that the targets for males and females would no longer equate to 50% each.

Now, the iterative process begins. The software would now apply another multiplicative factor, so that the gender was weighted to 50% males, 50% females. Then, it would re-weight to 40% 16-34 year olds and 60% 35+ etc etc.

As the program performs the iterations, the data gets closer and closer to the targets. In some cases, it may be impossible to reach the exact targets. Most software programs that can handle rim weighting will have a fixed number of iterations that it will attempt before it gives up. In some cases, due to the structure of your sample and the laws of mathematics, it may not be able to achieve your desired targets; in some cases it may be completely impossible as your sample is so far skewed or biased to be able to reach the targets you are seeking. There are some notes in Section 4 about this.

Where there are more than 2 variables being used as rim weighting targets, the iteration process will pass through each of the variables in turn before it starts again at the first one.

4. Checks you should apply and reasons for caution

There are checks and cautions that you should consider (in no particular order of importance):

- a) Rim weighting is more susceptible to volatility than 'standard' target weighting, particularly when you have more than 2 rim weighting variables. It is important that you check the range of weighting factors that are being applied to each record rather than being satisfied by the fact that output looks right because it has met your desired targets. As a rule of thumb, the lowest factor should not be less than half the average factor applied or more than twice the average factor applied. However, you should consult a qualified statistician where you have any concerns about the legitimacy of any factors used.
- b) Rim weighting will prove particularly volatile when you apply too many targets. If you are getting volatile weights or some outliers, this may be caused by having too many targets. The program may be applying a very high weight to achieve one or a small number of your rim targets.
- c) Rim weighting has a propensity to produce volatile weight factors when your targets are highly skewed. For example, if you set a rim target of TV Viewers (98%), Non-viewers

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(2%), this may cause volatility. If you have several variables skewed in this way, the results are even more likely to be volatile.

- d) Rim targets with too many items may cause volatility. For example, making a rim 25 publications that a respondent reads most often. It may be better to group these into publication types unless you have a very large sample.
- e) The smaller the sample you have, the fewer rims you should have. You should seek a statistical expert to advise on this. A sample of 500, for example, would usually be fine for 3 rims of, say, 2, 3 and 4 items.
- f) Rim weighting may not work where variables are highly correlated. For example, if you set rim targets for those with a high/medium/low income and for luxury/midrange/cheap car owner, there would probably be a high correlation between luxury car owners and high income respondents.

5. Disclaimer

Whilst every effort has been made to ensure that this information is correct, the information contained in this document is used at your own risk.

6. Need a working example?

Just email phil.hearn@mrdcsoftware.com and he will send you a working example in Excel that you can use to calculate rim weights yourself.