

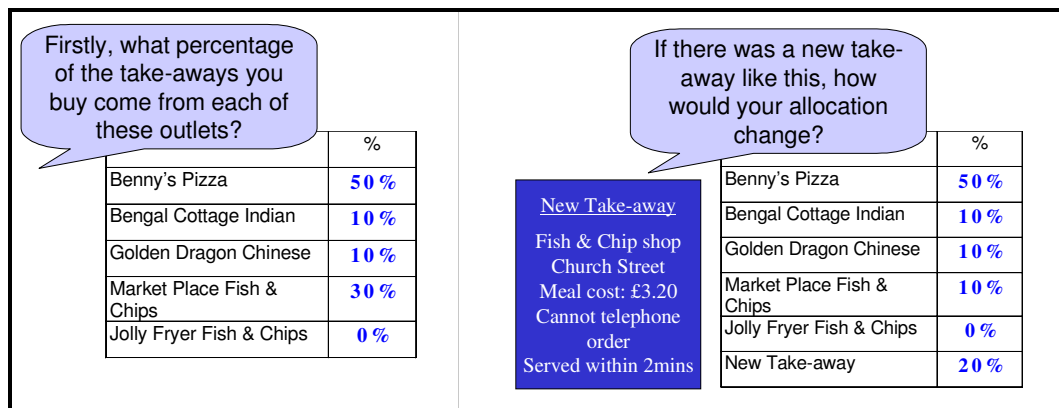
# Resource Allocation Conjoint Methods

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## Introduction

Resource allocation, or constant sum, questions have often been used in pharmaceutical market research to assess the likely impact of a specific new product on a market. Its traditional application involves first asking respondents how many patients receive each of the existing products. The respondent is then shown the details of a new product, and asked to re-allocate their prescriptions.

Figure 1 shows a resource allocation regarding take-aways. The respondent is first asked what proportion of their take-away meals come from each existing outlet, and is then asked how that would change with the launch of a new fish and chip shop.



**Figure 1 Example Resource Allocation Question**

An extension to this approach is to ask repeated resource allocation questions to assess how the allocation changes according to the product introduced. In the above example, we could vary the type of outlet, the cost, whether you can order by telephone, the delivery service and the speed of service. This approach not only allows us to model the likely usage of any new product, but also the impact of changes to each attribute on this uptake. In this respect, resource allocation conjoint methods are very similar to other conjoint techniques.

## Appropriate and inappropriate use

Resource allocation is an appropriate technique “when people can estimate frequency of usage [percentages] in a context” (Huber & Bradlow, 2001). A specific example is in estimating prescriptions given that a diagnosis has already been made. It would not be appropriate to use resource allocation methods to estimate prescriptions across a range of patients who had not yet had their diagnosis confirmed, and it is important that the context of any exercise is defined clearly to ensure this.

The specifics of the approach will also depend on the therapy area and the way in which physicians treat patients. For example, when discussing a new anti-depressive it may be appropriate to ask about the proportion of prescriptions for each drug, since a physician is likely to write many scripts each month. When considering a less common therapy area, such as HIV it may be more appropriate to ask a physician about their next ten prescriptions.

Huber and Bradlow suggest that resource allocation is not appropriate:

- ◆ As a measure of preference strength
  - ◆ allocate 10 points proportional to your preference
- ◆ As a measure of choice uncertainty
  - ◆ indicate the probability of choosing each alternative
- ◆ As a summary across different usage contexts
  - ◆ what proportion of beverage purchases will be Coke?

It is also unlikely to be appropriate where the number of attributes that will vary is large, or where the sample is small.

### **Advantages of the resource allocation approach**

With most conjoint approaches used in the pharmaceutical setting it is advantageous to ask physicians to consider a single, real patient (usually the last patient seen who fits certain criteria). The aim of this is to ensure that the physician is reacting to the exercise in the same way that they would react to a product choice decision in real life. The drawback of this approach is that it is difficult to ensure that we are getting a truly representative sample of all patients that exist within the population. The biggest concern is that the patients discussed may be “typical” - or even stereotypical. With a resource allocation approach, the physician should be considering all of the patients he or she encounters, thus covering the typical and atypical fully. By ensuring that all patients are considered as a part of the exercise we also ensure that we have a good representation of the treatments used.

### **Disadvantages of the resource allocation approach**

One of the greatest disadvantages of the resource allocation approach is the size of the task. In much the same way as we must ask respondents to repeat many choice tasks, physicians would need to carry out the resource allocation many times. Unfortunately, the resource allocation task requires around the same number of tasks as a typical choice-based conjoint. The additional burden of repeating this allocation calls into doubt the validity of the data gathered. To date there has been no general paper written to allow accurate assessment of the accuracy of resource allocation models when large numbers of variables are included.

It is also not possible, with resource allocation methods, to segment the population after fieldwork. In other words, it is not possible to assess whether there is a segment of patients or physicians in whom likely usage of a new product is especially high. This inability to carry-out post-hoc analyses is a significant weakness of resource allocation methods.

Resource allocation is also limited in its assessment of combination prescribing, in that any measure of the combination use of products will be generated from the overall shares. This does not reflect reality, since some drugs will not be used in combination with certain others. Because of this drawback, resource allocation is best used in areas where products are used alone, or where a limited number of combinations are possible.

### **Conclusions and recommendations**

Resource allocation could potentially be a revolutionary modelling technique, but it is likely to be limited by the significant drawbacks in terms of respondent burden. As such it is not recommended that resource allocation should be used on a regular basis, rather that it is reserved for use on studies with few attributes, where the task would be manageable for physicians. It is also only recommended for use on studies where post-hoc analysis of subgroups and analysis of combination usage are not required.

**References**

Huber, J.C., Bradlow, E. (2001), "Appropriate Use of Constant Sum Data", *Sawtooth Software Conference Proceedings*

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