TIME RELATED MEASURES OF RELATIVE 'EFFECT' - AN ESSENTIAL INGREDIENT FOR MULTI-MEDIA CAMPAIGN EVALUATION

Peter Masson, Bucknull and Masson
Peter Callius, Research International

One of the clearest trends emerging in today's fashion driven media world is the Marketing Directors' need to further justify their budgets.

They are also facing a rapidly changing media landscape. The fragmentation and growing number of media means that the time devoted to any single medium will constantly shrink. This means that the single contribution from a single media will decrease.

There has of course always been the possibility of evaluating mixed media campaigns in aggregate by tracking advertising effectiveness. Post evaluation may bring us further understanding but is quite difficult to integrate such data in the media planning process. We have also before been able to make strategic resource allocations between different Media groups. However, on a tactical level we have most often had to rely on single media evaluation and optimization.

It is evident that there is a need of further understanding in the mixed media field. It is a fact that today's media mix decisions are most often not backed up by Research findings. Advertisers are pressing the need to understand and evaluate mixed media planning and thus evaluate the ROI of their integrated communication.

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Politics, commercial interests and not the least methodological questions have and are still hindering this development, despite the obvious needs.

There is however a sharp differentiation between advertisers, planners, researchers, advertising agencies and media owners when it comes to their attitudes towards mixed media planning and research connected with it.

The advertisers need the integrated data to justify their media spending and to enhance their strategic and tactical media decisions.

The planners are divided into two groups. One group that is clearly working towards the best interests of the client and who are driven by the inevitably force of doing a good job. The other group is more pragmatic. If the client wants bells and whistles they will provided so long as it does not shrink margins and make the task more difficult to handle.

The Media Owners themselves are most often rather pragmatic and will support development if it will make them look better. If not, the issue will be buried somewhere deep in the session vaults of a JIC.

The Advertising Agencies are artists and are as such considered being above these questions.

Media Researchers will work toward development if they are not too closely connected to any of the above-mentioned Media Owners. The Researchers are quite naturally also the ones most concerned with methodological problems.

Politics and other concerns have divided the players in the arena sharply.

But in the end it will really not matter. The one with the largest purse will decide what route to take. The advertiser will force a solution to be found.

"If we provide you with X amount of dollars we need to evaluate and plan across media". All our pleas about understanding the methodological difficulties will fall flat to the ground. We will be forced to bring forth a solution.
This stresses the need to move from the path of single medium evaluation and onto multi media evaluation. Then to eventually arrive at multi media optimizing.

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Let's look at the alternatives. The three paths described below are the ones at the moment most Industry people seem to accept as the walk able ones. We have to keep in mind that the path we choose may be influenced by political questions, data modeling capabilities, data collection methods, software etc.

- The Assumption of Independence
- The Single Source approach
- Data Fusion.

The Assumption of Independence is a rather crude method used to try to evaluate the impact of a mixed media campaign based on aggregating separate analyses from single media data bases. We are here leaning on the assumption that exposure to one medium is totally independent of another.

Data Fusion seems to be a method favoured more and more. We are however facing some political issues when owners and in the worst of cases JIC's are to open up their raw data bases to competitors. The possibilities are extremely interesting even though some have described the whole process as one of confusion rather than fusion. We also have to reach some consensus on what databases to use. We are at the moment working a lot with this approach but will explore that subject further in forthcoming papers.

The Single Source approach faces problems of its own. The advantages of collecting vast amounts of data from a single respondent are obvious. The inability to collect the information is unfortunately well known. To cover all media and all product categories leads to long interviews and declining response rates. These difficulties most often mean that we push the final planning and buying decisions to the traditional single media research anyway.

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In Sweden we have decided to follow the single source approach and we will, in this paper, describe it further and develop a case history using the SESAME multi-media planning software. The decision on which path to chose is the one most often influenced by politics as well as the opportunities for data collection. The Swedish media survey Orvesto Consumer is a two step postal survey. It's built on a random sample of individuals. We conduct approximately 40,000 interviews yearly. In the first step we collect Print and general television and radio data. In the second step we collect a seven day ¼ hour radio and television diary from the same respondents. The response rate is approximately 65% in the first step and 70% in the second. It is therefore obvious that the Swedish example has its clear advantages but might not easily be reproduced elsewhere.

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After the decision has been taken on what kind of data set we will use and which of the three methods we will use some assumptions have to be made. This is where we move into the more philosophical part of the play and where good modeling and the access to a solid media planning tool becomes essential (in our case this is SESAME). Assumptions are of course a poor replacement for hard research facts, but we have to bear in mind that media planning is really all about making justifiable assumptions based on hard facts combined with experience and common sense. It is our belief that the following fields have to be covered either by hard facts or assumptions. And that the data has to be weighted accordingly;

- Advertising exposure values
- Creating a map of multi-media advertising exposures
- The Matrix - Relative media effects & Target audience response values
- Synergistic effect values
- Time dispersion of exposures

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Advertising exposure values

We have to consider the different definitions of (advertisement) exposure used for different media. The chance of 'open eyes/ears' in front of an advertisement will be quite different for someone measured as exposed to 'any part of the magazine or newspaper containing the advertisement' (print AIR measurement) than for someone measured as 'present with the TV switched to that channel during a commercial break' (TV panel audience measure).

In order to equalize the value of an 'OTS' (opportunity to see) from the different research measures the planner needs to be able to modify the probability of exposure (i.e. apply exposure weights) to reflect the chance of an advertisement being seen within each media/media group.

For example the 15 minute data we collect in the Orvesto TV diary is modeled to represent an average minute rating. An average minute rating is unlikely to be comparable to print AIR. The planner might in this case assume that he should add a page traffic weight factor to modify the AIR figure to reflect the different chance of the advertisement exposure. Further page traffic is arguably correlated with reading intensity/loyalty and it would therefore be preferable to make the modifications according to reading frequency rather than an overall blanket adjustment

What is crucial to distinguish is that the role of this weight (probability of ad. exposure adjustment) is to equalize the meaning of an OTS between media/media groups being the OPPORTUNITY to see ('open eyes/ears in front of') the advertisement. ***This is quite different from the 'take up' of that opportunity which is a response function issue.***

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Calculating a map of multi-media advertising exposures

The first stage in any campaign analysis is to use the available quantitative media research data (modified by exposure weights) to produce a 'map' of the way exposure opportunities are presented to the target group(s).

Mapping the exposure distribution (FD) (i.e. determining those with one, two, three OTS etc) for Press alone, or for TV alone is not straightforward. Aggregate (or Formula) methods all smooth and simplify the estimated FD. The FD becomes uni- or bi-modal and does not accurately represent a realistic situation. The Frequency Distributions for TV in particular are typically many-modal. Particularly when used for optimisation, such simplified FDs lead to incorrect media decisions.

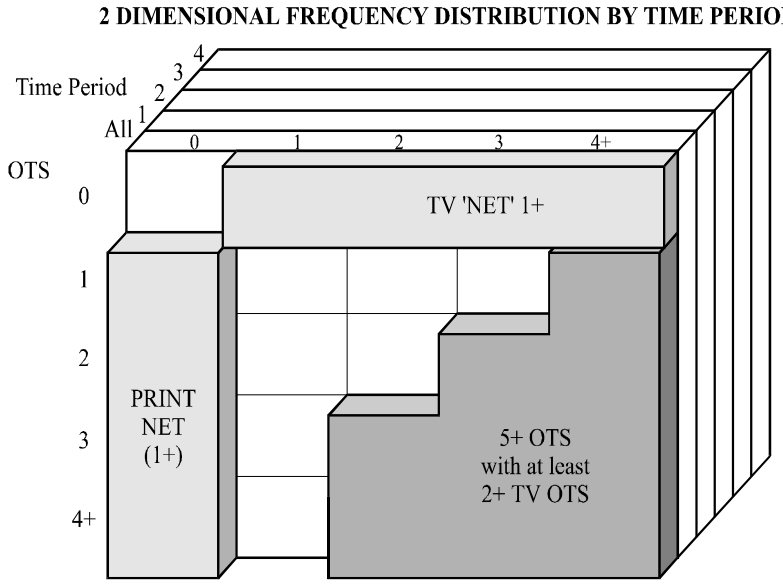
It is essential that Multi-Media models are individual informant models. Further, the appropriate models for TV and Press are very different. For Press it is not unreasonable, except in special cases such as Parent/Supplement or Daily newspapers measured separately for each day, to use accumulation models, which assume near independence of the readerships of individual publications. Such a model is hopelessly inappropriate for TV.

In SESAME we do have two very different individual informant models for TV and Press. But because the two FDs are calculated at the individual informant level, it is straightforward to calculate an accurate Multi-Media FD.

Having the individual (Press and TV) components of the Frequency Distribution available at the informant level also allows the application of very different Response Functions for different time and media parts of the schedule, and/or for different market segments. This is vital if one is to develop a realistic response-based Multi-Media schedule evaluation (and optimisation).

The following schematic indicates the Multi-Media map that is produced within SESAME:

Chart 1



Essentially SESAME creates a detailed map of the (target) population detailing what proportion receive only print, only TV and for those receiving multi-media exposure what proportion receive say 5TV OTS and 2 Print OTS and what proportion receive 1 TV and 6 print OTS. Indeed the calculation of all media mix combinations.

The issue now becomes the interpretation of the exposure distribution map that SESAME has provided. The simplistic 'effect' measures that we currently use to evaluate one (print or TV) schedule against another (Gross Reach, Net (1+) reach, 3+ reach and average OTS) are quite insufficient. We will therefore explain in detail later the role of 'Effective Reach' in the media planning process.

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The Matrix - Relative media effects & Target audience response values

We have to take into account the different levels of response of different population groups to given levels of (advertising) exposure and the impact of different media types on those different responses.

The concept and application of 'response' values is not new to media research and is regularly used in media models to encapsulate in one figure the relative value of one (print or TV) schedule versus another. In the following example we define a response curve and apply it to an OTS (FD) 'map'

The response assumption is that 25% (of the target) of those given ***one*** opportunity will 'take up' the opportunity to 'learn' the advertisement content, that 50% of those given ***two*** opportunities will 'take it up', that 75% of those given ***three*** opportunities will 'take it up' and that everyone (100%) given ***four*** opportunities will 'take it up'. With this set of assumptions we have defined a 'response' (learning) curve. This can be used to evaluate different schedules by weighting the schedule reach distributed by frequency as follows:

Table 1

Exposure opportunities (OTS)	**'Response' % 'taking up' the ad. opportunities**		**% of target at each OTS level (frequency distribution, FD)**			
			Sch A		**Sch B**	
			%	**E.R.**	**%**	**E.R.**
None	0		50 =	0	40 =	0.0
1	25		10 =	2.5	30 =	7.5
2	50		12 =	6.0	20 =	10.0
3	75		20 =	15.0	8 =	6.0
4	100		8 =	8.0	4 =	4.0
Effective Reach (E.R.)		Total		31.5		27.5

In this way Effective Reach (which is weighted net reach) encapsulates the value of a schedule in one figure. With this set of 'response' assumptions Schedule A provides the higher Effective Reach value.

We can extend this concept to evaluating multi-media schedules by writing different response curves according to the medium's ability to stimulate the 'take up' of the OTS. If Schedule B was a TV schedule we might well wish to make alternative response assumptions for TV advertising exposure opportunities. In print (say Schedule A) readers have a ***choice*** to self select whether to 'take up' the opportunity. With TV the advertisement is essentially ***'forced'*** on those present in the room. We may expect the 'take up' of the opportunity to be quicker. Below therefore we make a different (and faster) set of 'take up' assumption for TV exposure opportunities.

Table 2

(TV) Exposure opportunities (OTS)	**% taking up the 'ad.' opportunity**	**% of target at each OTS level (frequency distribution, FD)**	
			E.R
None	0	40 =	0.0
1	50	30 =	15.0
2	70	20 =	14.0
3	90	8 =	7.2
4	100	4 =	4.0
Effective Reach		Total:	40.2

In this case the 'effective reach' of the (TV) Schedule B is considerably higher than for (press) Schedule A.

The response curve is therefore the measure to distinguish between the 'effect' of two different schedules where this response curve can also be varied to reflect the ability of the medium to 'force' the 'take up' of the advertisement opportunity and thus make comparisons in a multi-media situation.

However to evaluate a Schedule of ***mixed*** print and TV demands a set of relative 'response' values for ***every*** media combination at ***each*** response level. Clearly this is not practical to define manually as there millions of possible combinations. For example, the relative effect of receiving 8 TV and 2 print 'hits' compared to 8 print and 2 TV 'hits'. SESAME achieves this for the Planner by using the discrete response curves for print and TV set by the Planner for each media type (e.g. print, radio TV, cinema) (first chart 2 below) from which it then creates a weighted response value for every media combination at each response level. This is represented schematically in the second chart 3 below:

Chart 2

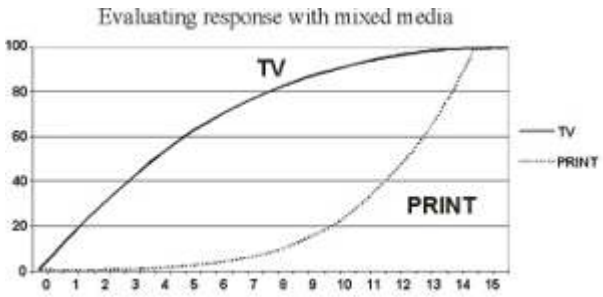
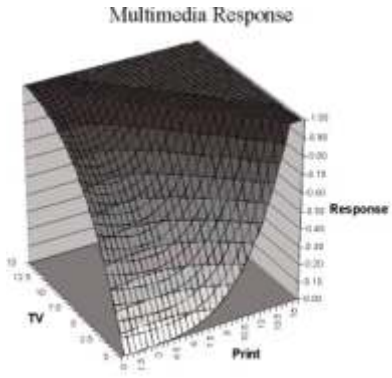


Chart 3



There will also be **different** (relative) **response values** according to **different population segments**. In part this depends on how the target group is defined since advertisement 'relevance' for the person will be a primary determinant of both the 'take up' of the advertising opportunity and for how long the information is retained. This means there will be a strong link between the definition of **the *target group*** and the ***rate of response***. Regular users of a product type are more likely to respond to information about that sector than non-users. How wide (expanding market share) or narrow (maintaining market share) the targeting strategy is set will affect the response rate (as well as impacting on budget requirement, creative approach and media choice).

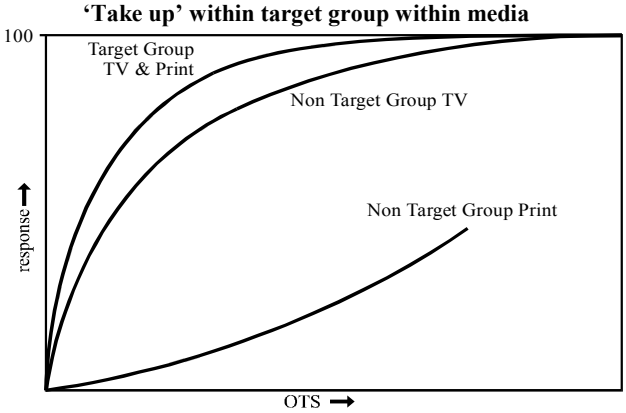
But even within a target group defined as regular users of the product area we would expect differences in response. For example that regular satisfied users of brand A will 'take up' exposure opportunities for their brand quicker than loyal satisfied users of a competitive brand B. This emphasizes the need for data on interests, attitudes and product and brand usage (linked to media) for targeting strategy and detailed response group definition. This stresses the point that simple socio-demographic targeting is just not enough for (multi-media) schedule evaluation.

We need therefore to be able to analyse the OTS 'maps' ***within*** different target response group segments and apply different response values to each.

As we have noted response is also media related as media have differing abilities to 'force' response and this may override the self-choice process based on interest and relevance. If the response is 'forced' (can't escape the TV) then those with low interest may also be forced to 'learn' and in the short term 'hold' (recall) similar levels of knowledge as the high interest target group (but will probably not retain it). Such a scenario is shown in the following chart. The 'take up' of the OTS is assumed to be very similar (and rapid) amongst the target group (defined according to high interest/use of the product) from TV and print. The non-target group 'take up' from TV (since they have been 'forced' by the medium) is almost as rapid, while the non-target group take up of the print OTS is very low (since they have a choice to assess and then reject).

Chart 4

'Take up' within target group within media



Target Group - defined by a relevance and interest measures

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Synergistic effect values

Synergies are perceived to be an important reason to mix media and have to be taken into account. Media are not independent in their communication 'effect'. There will be **synergistic effects.** Exposure to the advertisement in one media type (TV) may impact on the 'effect' of another (posters, print). Synergy weights are needed and have to be part of the model.

We can identify a number of possible ways that the close spatial positioning of exposures from media with different communication possibilities (and costs) will create communication synergies.

Response synergies
An approach to an individual at different times in different ways may find the way through a persons' selective perception more readily from the repetition of the message from a single direction.

Content synergies
Each medium has it own inherent communication abilities. Even though TV offers sight sound and movement there is no touch (or smell). It may be for the 'total communication' of the product and its attributes all the senses are required. In this sense media complement each other and the 'total effect' can be greater in communication terms than the sum of the constituent parts.

Memory reinforcement synergies
Contact with the different media take place at different times and provide the capability of reinforcing the previously gained knowledge. We can postulate that a poster or a radio advertisement can trigger recall (and cement knowledge) of a TV ad seen earlier. In this respect the incremental value of that (radio) 'hit' may well be as powerful in maintaining awareness as a further TV exposure (and a lot more economic). The use of cheaper/more continuous media within a media mix to stretch campaign continuity (knowledge retention) is common within planning.

Stimulus synergies
An Internet banner in itself may have a limited impact on its own but if a TV commercial had triggered interest in the company/product the banner may be clicked for detailed information, or a press ad read in detail.

By evaluating schedule performance on a daily basis we have knowledge of any 'close spatial positioning' of exposure from different complementary media. The Planner may (in the SESAME model) write in a synergy factor, which upgrades (increases the rate of learning) from multi-media exposure.

Time dispersion of exposures (OTS)

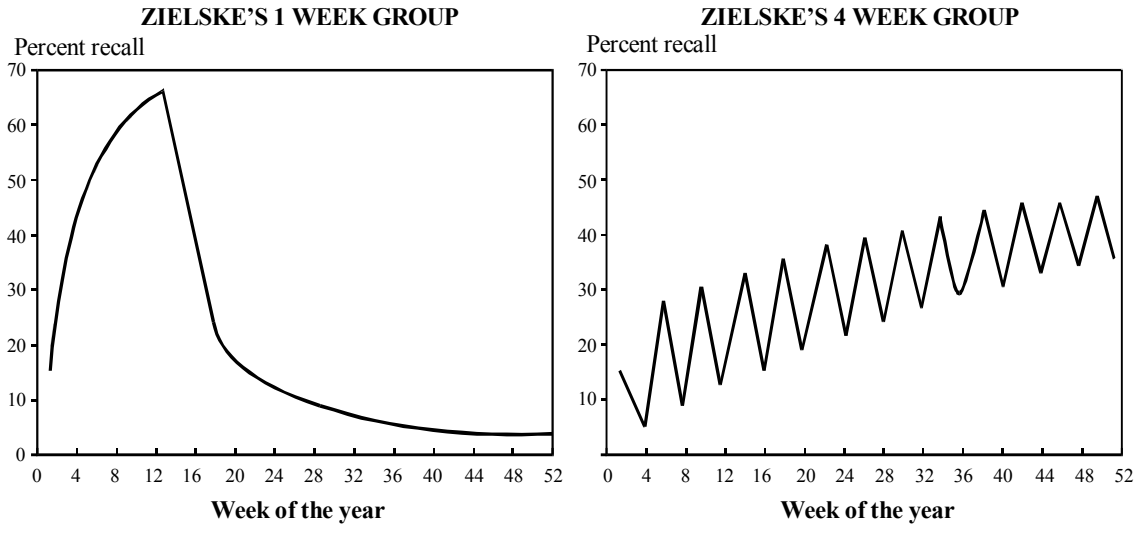
The time lag between different exposures will result in memory decay and this has also to be taken into account. So far in our response evaluation 'time' has been ignored. Multimedia campaign planning generally involves the juxtaposition of media across time. Response (which includes both learning and forgetting) depends on the **time dispersion of the 'exposures'** and effect measures should account for this. The analysis system will have to provide the planner with a model for this.

Clearly the distance in time between the presentation of the opportunities to see will affect the 'take up' (response) rate. 4 opportunities placed in one day or one a week for 4 weeks or one a month for 4 months will create different rates of 'take up' (learning) – because of forgetting in between exposures.

Now the advertiser's task is not only to inform and persuade the individual to act/continue to act but also to insure that the knowledge is retained until it is an ***appropriate time*** for the individual to act. So not only are we interested to get people to ***accept*** the message but also to ***retain*** it. We need ***both*** a 'learning' curve and a 'forgetting' curve in a schedule evaluation both of which will depend on the ***time dispersion*** of the advertising OTS.

Chart 5

ZIELSKE'S EXPERIMENT

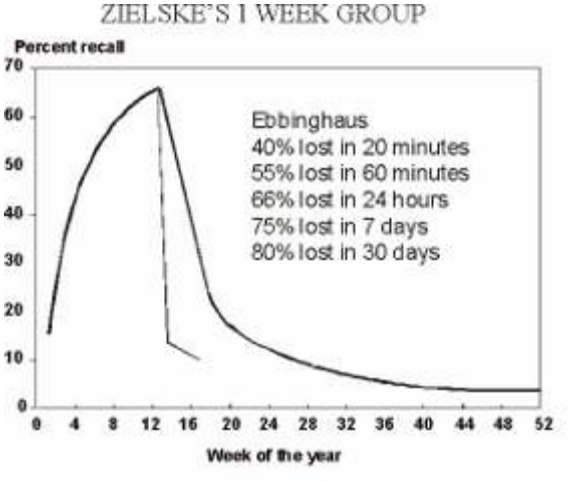


Zielske's 1959 experiment (reported by McDonald, Admap 1994) is one of the few pieces of evidence we have of the rate of learning and forgetting with different time dispersion of the advertising opportunity. Two matched samples were mailed 13 advertisements respectively one and 4 weeks apart. What is most notable from the experiment is not so much the slower rates of

knowledge accumulation with the 4-week group but the rate of knowledge loss between the advertisement exposures. Some 65% of the 'learning' was lost between the advertisements placed 4 weeks apart (for the first three months). For those receiving the advertisements one week apart over 50% of the learning (recall) was 'lost' within 4 weeks of the last advertisement.

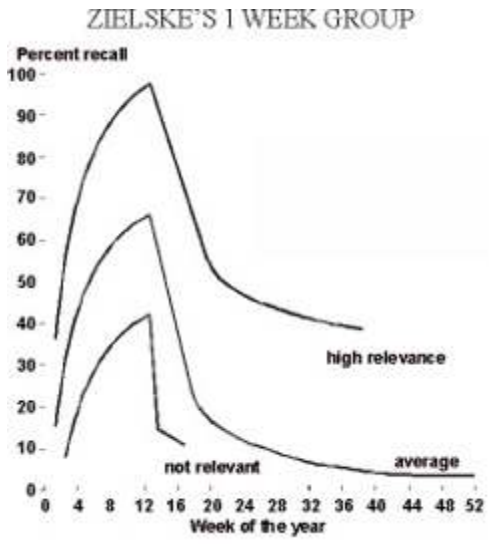
Perhaps the steepness of this memory loss (or memory overlay) should not surprise us. The Ebbinghaus retention curve (from early 1900 experiments reported by Stagner and Karwoski 1959) documents the rapid loss of recall (of number and word sequences). In his curve, confirmed by later researchers:

Chart 6



In the following chart we have overlaid the Ebbinghaus curve on the Zielske one week placement curve. We postulate that the steepness of the Ebbinghaus retention loss is a function of the total lack of relevance of the material learned (random number sequences and nonsense words/phrases) whereas the retention in the Zielske curve is an average of people for which the advertisement had high or low relevance. We also postulate a third 'curve' for those for whom the advertisement has high relevance. Here not only would the rate of 'take up' be quicker but also the retention of that information would be longer. Our hypothesis is therefore that the segmentation of the target group into response groups is an essential part of schedule evaluation. The schedules under evaluation will contain different profiles in terms of response group compositions and both the rate of 'take up' and retention is affected.

Chart 7



The question now arises as to the ***time period*** over which to evaluate response ('take up' of OTS). We would suggest in the light of the Ebbinghaus curve (66% retention lost in one day) that the Zielske once a week exposure curve, while drawn as a smooth run curve, is in fact zigzagged in its upward rise, as for the 4-week exposure curve. Clearly response measures were not taken sufficiently frequently to record this.

In our (SESAME) model therefore we evaluate Effective Reach on a DAILY basis and applying the forgetting curve for subsequent days. This is 'topped up' by further Effective Reach as it occurs on a daily basis. For example:

Table 3
Daily Effective Reach degraded by day (= forgetting curve)

Day	1	2	3	4	5	6	7	8	Total (8 days)
Day 1	**5.4**	5.1	4.9	4.6	4.3	3.8	3.2	2.7	
Day 2		**2.1**	2.0	1.9	1.7	1.5	1.3	1.0	
Day 3			**6.2**	5.9	5.3	4.3	3.7	3.1	
Day 4				**1.3**	1.2	1.1	1.0	0.8	
Timed Effective Reach (TER)	5.4	7.2	13.1	13.7	12.5	10.7	9.2	7.6	**79.4**

Where the 'forgetting' (retention loss) is for day 2 5%, day 3 10%, day 4 15%, day 5 20% Day 6 30%, day 7 40% and day 8 50%.

This evaluation of the daily exposure frequency distribution has to be made within differing response group (= different learning and forgetting curves) within media group. The overall measure of schedule performance is given by the sum of the ***Timed Effective Reach (TER)*** from all schedule components (response groups within media group) over the period of campaign relevance.

The time of exposure and dispersion of 'hits' is available in television and radio research and in certain newspaper research. However, magazine research does not generally provide the planner with this kind of time distributed advertisement exposure data. Recently interesting pieces of research have been conducted in this area in Belgium and the US. It might prove to be a major disadvantage to the magazine industry if they do not catch up in this kind of research and be able to report on the time distribution of advertising 'hits' delivered.

Conclusions:

Following this analysis it is clear than an evaluation of multi-media schedules will demand:

1. The ability to 'map' precisely the (multi-dimensional) distribution of exposure opportunities by medium, where one of those dimensions is time and where the planner has been able to modify exposure probabilities to equalize OTS in terms of advertising exposure.

2. The use of the concept of a ***response curve*** which expresses relatively, the proportion of the population that will 'take up' the OTS (opportunity to see) at each level of OTS.

3. Multiple response curves to allow for the rate of 'take up' to be varied ***according to the force of the medium*** delivering the OTS or the combination of the media (2 TV and 3 print versus 4 TV and 1 print etc).

4. Different response curves defining different rates of 'take up' according ***to the type of individual*** receiving the message and according to the (mix of) media delivering the OTS.

5. A factor by which the 'take up' can be adjusted to allow for ***media synergies*** within different media combinations

6. Recognition that both the 'take up' of the OTS and the content retention will be dependent on the ***time dispersion*** (as well as the nature) of the OTS and that there will be both a learning and forgetting curve (also within individual within media type)

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We will try to expand these thoughts by showing a practical example of multi-media planning using Orvesto Consumer and the SESAME multi-media planning software.

Multi Media Case History from Sweden

The Product Sector studied is Shoes. The Client is the leading shoe retailing chain that requires to mount a short-term 4-week campaign pre-sales with a budget of 3.0m SEK (£200,000).

Target group: All adults valued (weighted) according to their annual expenditure on shoes. Orvesto Consumer 2000:1 provided the following expenditure distribution patterns on shoes.

Table 4

SEK	%	Relative market Value
Under 250	7.7	2
251-500	21.0	4
501-1000	35.2	7
1001-2000	25.0	15
2001-3000	7.7	25
3001-4000	2.2	35
4001-6000	0.9	50
6001- +	0.3	100

This leads to a weighted/valued target population of 718,000 (based on a sample of 6936).

This (weighted) target group has distinct characteristics and indexes highly in certain RISC Socio-cultural sectors:

RISC segment	Index	Short description
Risk takers	135	(Flexible, energetic, enterprising, physically active)
Explorers	129	(Open to change and social ability. Self-reliant)
Pleasure Seekers	124	(Ambitious, material well-being, brand conscious)
Individualists	117	(Entrepreneurial, optimistic, practical, logical)

This information will be used in the creative development of the advertisements. Communication content will be geared to these kinds of people.

Demographically they (the weighted target) live proportionally more in large towns, are younger (15-39), are more female and live more in the East of Sweden. Expenditure on shoes is highly correlated with eating out, spending on amusements, clothes, perfume, sports gear and CDs, vacationing abroad, shopping at NK and MQ and cinema going.

The structure of the target group by weight of commercial TV viewing (channels 3/4/5) was:

Table 5

Weight of TV viewing	% of Target	% of Population
Heavy	42.4	44.2
Medium	28.4	27.4
Light	25.7	23.6
None	4.0	4.7

A TV campaign was built as follows:

The survey base used was Orvesto Consumer (2001:1). This contains (by means of a second interview) ¼ TV viewing data by channel derived from a 7 day TV (and radio) diary as well a print readership data and extensive market description data (from the first interview).

The SESAME multi-media planning software models the ¼ TV diary data to an ***average minute*** (= GRP) in such a way that if 15 spots are entered in the 15 minute segment the net reach of the 15 minutes will be achieved. It projects the 1-week diary forward to (n) weeks for ***longer period schedule evaluation***. The beyond the week audience accumulation rates are calibrated to those found in the People Meter panel in Sweden.

Once the planner has determined his target, the SESAME program will generate the top (20) 'hot spots' by reach, profile/target selectivity and cpt (cost per '000) having analyzed all ¼ hour performances for all days and channels.

From this list the planner may select a short list (based on a combination of reach, cpt and selectivity) for scheduling. The selected spot list may then be entered into the date plan (flighting schedule) where the 'hot spots' (¼ hours by day and channel) are highlighted. The schedule evaluation shows him, real time, the effect of adding and deleting spots.

In SESAME the planner also has the opportunity to 'modify' the probability of viewing (for an average minute) to the probability of ***being present*** for an average minute in a commercial break. This is the equivalent in press terms of 'modifying' the probability of exposure to the issue to the probability of being 'open eyes' in front of the spread containing the advertisement. ***Note this 'modification' is NOT the means to express the relative value of a TV advertisement with a print advertisement. Such an evaluation has nothing to do with the probability of exposure only with the subsequent effect of that exposure. As such it should be treated as a response variable.***

The selected TV only schedule 1, which uses spots on channels 3, 4 and 5 with bursts in weeks 1 and 3, is shown in Annex 1.

The evaluation of the selected schedule (total cost SEK 2.98m) produced the following results in the total (shoe purchase values) market and sub-segments according to weight of commercial TV viewing:

Table 6	**Total Market**	**Light/No TV**	**Medium TV**	**Heavy TV**
Gross Reach % (GRP)	251.8	61.4	196.9	424.0
Net Reach %	54.9	21.8	54.7	76.0
Average OTS	4.6	2.8	3.6	5.6
3+ OTS	42.9	11.0	55.9	65.8
Share of gross contacts %	100.0	7.2	22.2	70.6
Share of market %	100.0	29.3	28.3	42.4

Essentially 29% of the market (value) is light TV viewers who receive only 7% of the gross advertising weight. The medium weight TV viewers represent 28% of the market and receive 22% of the advertising weight while heavy TV viewers representing 42% of the market receive 71% of the advertising weight.

Only 22% (net) of light TV viewers receive ***any*** contact compared to 76% of heavy TV viewers. Thus of the 29% of the market represented by light TV viewers, 78% receive no (TV) exposure at all. Those in this light TV sector that are exposed at all (22%) receive on average half the OTS of the heavy TV group. (2.8 average OTS compared to 5.6 average OTS). This is unlikely to be an efficient distribution of advertising weight.

There is however an argument that because light TV viewers are lightly exposed to all (TV) advertisements the relative effect of smaller doses of advertising is greater. That is the share of voice that the advertiser has with them is the same as for the heavy TV viewers. The counter arguments to this are that people do not live in a TV only environment and are receiving advertising messages from a wide variety of media and indeed it is usual that light TV viewers are heavy print readers. Further it can be argued that light viewers are the most selective viewers and when they are viewing are highly focused on the editorial program material and not the advertising. Advertising effect studies, to the knowledge of the authors have not studied these issues.

The opportunity for the planner to rectify this imbalance in the distribution of exposures over the target group with TV alone is limited. To demonstrate this the 'hot spot' analysis was re-run against the target of 'light TV viewers' in the valued (weighted) shoe market and a schedule devised based on a high content of light viewers efficient spots. However these spots generally are off-peak and low reach so although there is some improvement in the distribution of weight to light and medium weight viewers the overall reach and efficiency of the schedule is much reduced.

Table 7	**Total Market**	**Light/No TV**	**Medium TV**	**Heavy TV**
Gross reach % (GRP's)	205.4	76.7	195.9	300.7
Net reach%	51.5	25.1	54.1	66.6
Av. OTS	4.0	3.1	3.6	4.5
3+ OTS	38.1	14.5	37.7	53.3
Share of gross contacts %	100	10.9	27.0	62.6
Share of market %	100	29.3	28.3	42.4

The planner has, to some extent increased the weight ratio to light viewers from a 7% share of weight (GRP's) to 11%. However the 'price' of this in terms of the overall schedule value is very high as the following comparisons show:

Table 8	**Original TV Schedule**	**Light TV viewer Schedule %**	**Difference**
Overall gross reach % (GRP's)	251.8	205.4	-18.4
Light viewer (GRP's)	61.4	76.7	+24.9
Medium weight viewers (GRP's)	196.9	195.9	-0.7
Heavy weight viewers (GRP's)	424.0	300.7	-29.1

The question now is therefore: Can print media provide both the target group selectivity and light TV viewer selectivity to complement the TV campaign and provide a more balanced distribution of advertising weight across the total market?

Using the same database of Orvesto Consumer 2000:1 the SESAME print optimizer was used to construct a schedule of daily newspapers (national and local groups), Sunday and evening newspapers, based on colour pages and optimized against the target market (light TV viewers weighted according to the value of shoe purchase expenditure). 50% of the budget was allocated to this press schedule (SEK 1.5m.).

The resulting press schedule evaluated against the total (weighted) market provided the following results:

Table 9	**Total Market**	**Light/No TV**	**Medium TV**	**Heavy TV**
Gross reach % (GRPs)	128.0	164.5	125.8	104.3
Net reach %	39.3	48.5	39.5	33.8
Av. OTS	3.3	3.4	3.2	3.2
3+ OTS	25.4	33.1	24.8	20.6
Share of gross contacts %	100.0	37.6	27.8	34.5
Share of market %	100.0	29.3	28.3	42.3

In this press case the 29% of the shoe market who are light TV viewers receive 38% of the gross campaign weight, and the heavy viewers 35% compared to a market share of 42.3%. Press clearly has the ability to focus advertising weight to the light TV viewer. We now need to examine the effect of this print schedule when combined with TV (at 50%) of its original weight.

The combined schedule of press and TV (budget SEK 3.0m) produced the following results.

Table 10	**Total Market**	**Light/No TV**	**Medium TV**	**Heavy TV**
Gross reach % (GRP's)	262.7	204.7	239.6	325.4
Net reach %	71.3	57.6	69.5	82.1
Average OTS	3.7	3.6	3.6	3.4
3+ OTS	44.1	38.6	38.6	53.4
Share of gross contacts	100.0	23.2	24.9	51.9
Share of Market %	100.0	29.3	28.3	42.4

The addition of print has significantly increased net reach and has improved both gross reach (GRP's) and the proportion with 3 or more OTS.

Table 11	**Total market (equal SEK schedule)**		
	TV only Schedule	**Print 50% TV 50%**	**Difference %**
Net Reach %	54.9	71.3	+29.9
See 3+	42.9	44.1	+2.8
Gross reach	251.8	262.9	+4.4

It has also significantly rebalanced the gross advertising weight going to the different weight of TV viewing groups.

Table 12	**Light/No TV**	**Medium TV**	**Heavy TV**
TV Schedule % share	7.2	22.2	70.6
50/50 Print TV schedule % share	23.2	24.9	51.9
Share of market %	29.3	28.3	42.4

It has also been able to substantially improve the balance of ***net reach*** between the different weights of the TV viewing classes and improve it in all cases.

Table 13	**Light/No TV**	**Medium TV**	**Heavy TV**
Net reach %			
TV only	21.8	54.7	76.0
50/50 % TV print	57.6	69.5	82.1
Increase (index)	264	126	108

There is therefore a very strong **IMPERATIVE** argument to use print: it ***increases net reach*** and can ***distribute exposure weight more evenly*** across the target group. This is an argument regularly used to support the use of press in a mixed schedule situation but normally any estimation of combined reach is based a crude model of random duplication. Here the duplication calculation is precise

However the case for press is not entirely proven since the evaluation takes no account of the relative effect of receiving print or TV exposures, or a given combination of them.

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This TV only schedule, a mixed TV/Print and a print only schedule were subjected to further analysis. The first TV only schedule consisted of 49 spots placed in each of weeks 1 and 3 at a total cost of SEK 3.0m.

The second schedule consisted of TV and print each with 50% of the SEK 3.0m budget. Half the budget was removed from each of the TV advertising weeks of schedule 1 (those spots with the most expensive cost per thousand target). The print schedule was designed to maximize delivery of light TV viewers in the target group and was confined to press media i.e. mornings, evenings and Sundays, being media where next or subsequent day reading is zero or very limited.

The third schedule consisted of print only and was built, using the SESAME print optimizer, to a budget of SEK 3.0m to emphasize reach and targeting the overall weighted (by value of purchase) shoe market. Like schedule 2 it only used morning, evening and Sundays newspapers.

Details of the schedules are to be found in Annex 1

We first analysed the schedules in a **non-time distributed** manner. The first of these analyses made a response function differentiation between print exposure and TV exposure and the second made a distinction between different response groups within print exposure.

For the first analysis the response curves which were:

Table 14	**O.T.S. level**						
	0	1	2	3	4	5	6+
Print % 'take up'	0	18	36	54	70	86	100
TV % 'take up'	0	62	92	100	100	100	100

The Effective Reach values derived were:

TV only	52.9
TV/Print 50/50 mix	54.7
Print only	50.1

For the second analysis we divided, for print exposure, target group members into three response groups.

1. RISC group: Explorers, Risk takers, Individualists and Hedonists who visit MQ stores at least once a quarter (= fastest response)
2. Those who visit MQ stores at least once a quarter but are not in the 4 Key RISC groups in 1. above (= average response)
3. Those who visit MQ stores less than once a quarter (= slowest response).

The response curves used for each of the groups for ***press*** O.T.S. levels were:

Table 15 OTS	0	1	2	3	4	5	6+
(Fast) Group 1	0	62	92	100	100	100	100 (same as for TV)
(Average) Group 2	0	25	50	75	100	100	100
(Slow) Group 3	0	14	30	46	64	84	100

The TV response curve was unchanged

The Effective Reach values derived were:

TV only	52.9
TV/Print 50/50 mix	61.6
Press only	59.5

Under these assumptions the mixed press/TV schedule and the press only schedule out-perform the TV only. However at this point the timing effect of exposures on both 'take up' and retention of the information has been ignored. Once the maximum effective reach has been achieved for TV (quickly) subsequent exposures add nothing to the effective reach score while the (slower) effective reach build of print is in effect allowed to catch up. The larger the schedule the greater the advantage to print

We therefore produced within SESAME the exposure distributions and Effective Reach scores mapped ***day by day***. The ER score was divided into three contributing parts. The score from those receiving only print exposures (solus print), the score from those receiving only TV (solus TV) and the score from those receiving both print and TV.

At this point we introduced a ***synergy factor*** of +25%. This increased the rate of' take up' for those respondents who were exposed to print and TV on the same day i.e. the Effective Reach score was increased by 25%.

We 'degraded' Effective Reach over time as follows:

Table 16					
% Retention by time					
Day	1	8	15	22	29
TV	100	87	71	59	49
Print	100	95	86	80	74
TV/Print	100	91	78	69	62

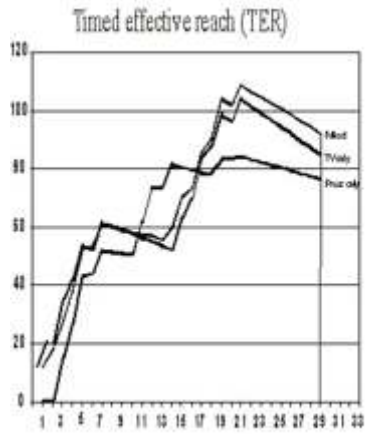
We used the Zielske retention curve at the end of the one week placement campaign for TV as the TV audience is likely to contain an average proportion of those for whom the ad is/is not relevant/pertinent. For print with (self-selection) this proportion is likely to

be much higher so we used the higher retention rate curve (Chart 7).

(Note: In the final SESAME model these retention factors will be applied (as for learning) according to response groups and weighted by the precise exposure mix between media groups.)

The day-by-day Effective Reach results can seed seen in Annex 1 and their accumulation seen in the following schematic:

Chart 8



The overall **TER (Timed Effective Reach)** scores for the 29-day campaign period were:

Schedule I TV only	2023
Schedule 2 TV/Print 50/50 mix	2266 (2224 excluding the Synergy effect)
Schedule 3 Press only	1803

Clearly if the campaign period was longer the relative position of the print only schedule particularly but also the mixed schedule would continue to improve as their forgetting curves are less steep than for TV. Under the set of response assumption we have used, the mixed schedule is the preferred option. What the model allows the planner to do is to run a whole series of analyses under different response assumption and test the sensitivity of the results to the assumptions.

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Concluding this case the authors hope to have established the necessity and usefulness of Multi-Media planning and evaluation and a new approach to achieving it. One has to bear in mind that what we are actually doing is comparing the *relative* value of different schedule options and not trying to predict *absolute* effects. We base these options on collected data and modeling and combine it with our assumptions.

It is obvious that we as an industry lack some of the research data that is needed to take Multi-Media to the outer boundaries. To move forward we need to decrease the level of assumption and increase the level of Research. In the mean time we should not be reluctant to make reasoned assumptions. In defining and making such assumptions we point up the issues and the new areas of Research needed. That we do not have all the answer yet is no excuse for ignoring the issues.

Data collection possibilities and politics will have an major impact on the way different countries approach the Multi-Media issue, in particular which of the three data paths to take (multi-basing, fusion, single-source).

But at the end of the day we always have to remember, "Man is the measure of all things"
Excellent research and intelligent modeling and powerful software are worth little if it's not in the hands of a skilled and intuitive planner. The task of knowing what media to add and when will always need a great planner.

We should also remember that *Media Research* should not actually be about Media but about the understanding of *People*. It is our firm belief that we will (have to) see an integration between Media, Market, Consumer, Advertising and Social Research in the days to come if we are to move forward in Multi-Media planning.

Let's all go Holistic.

ANNEX 1					**EQUAL SEK 3m. SCHEDULES BY TIMED EFFECTIVE REACH**																										
Schedule 1 TV only 30'																															
Week No.	**1**							**2**								**3**							**4**							**5**	
TV3	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Total
10.00-10.15	1														1															2
13.00-13.15	1	1													1	1														4
16.15-16.30	1	1													1	1														4
20.00-20.15			1														1													2
20.45-21.00			1														1													2
21.15-21.30							1													1										2
22.00-22.15			1				1										1			1										4
22.45-23.00			1														1													2
																														0
Week No.	**1**							**2**								**3**							**4**							**5**	
TV4	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo		
06.00-06.15					1														1											2
06.30-06.45	1														1															2
07.15-07.30			1														1													2
13.45.14.00			1														1													2
16.00-16.15	1														1															2
17.45-18.00	1	1	1	1	1										1	1	1	1	1											10
21-.00-21.15		1			1											1			1											4
21.45-22.00							1														1									2
22.00-22.15	1			1											1			1												4
01.15-00.30				1			1											1			1									4
Week No.	**1**							**2**								**3**							**4**							**5**	
Kanal 5	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo		
21.00-21.15				1														1												2
21.15-21.30				1														1												2
23.45-24.00	1														1															2
Total spots	8	4	7	5	3	0	4	0	0	0	0	0	0	0	8	4	7	5	3	2	2	0	0	0	0	0	0	0	0	62
ER	12	8	16	8	13		10								12	8	16	8	13		10									
TER Sch 1	12	20	35	42	54	52	61	60	59	58	57	55	54	52	63	70	83	89	99	96	104	102	99	97	95	92	90	88	85	2022
Schedule 2 Mixed TV (30') and Press																															
Week No.	**1**							**2**								**3**							**4**							**5**	
TV3	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Total	
10.00-10.15	1														1															2
13.00-13.15	1	1													1	1														4
16.15-16.30	1	1													1	1														4
20.00-20.15			1														1													2
20.45-21.00			1														1													2
21.15-21.30																														0
22.00-22.15			1														1													2
22.45-23.00			1														1													2
																														0
Week No.	**1**							**2**								**3**							**4**							**5**	
TV4	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo		
06.00-06.15					1														1											2
06.30-06.45	1														1															2
07.15-07.30			1														1													2
13.45.14.00			1														1													2
16.00-16.15	1														1															2
17.45-18.00	1	1	1	1	1										1	1	1	1	1											10
21-.00-21.15					1														1											2
21.45-22.00							1														1									2
22.00-22.15	1														1															2
22.30-22.45							1														1									2
01.15-00.30				1														1												2

ANNEX 1 Continued					EQUAL SEK 3m. SCHEDULES BY TIMED EFFECTIVE REACH																									
Week No.	**1**							**2**							**3**							**4**							**5**	
Kanal 5	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	
21.00-21.15																														0
21.15-21.30																		1												1
23.45-24.00																														0
Total spots	7	3	7	1	3	0	2	0	0	0	0	0	0	0	7	3	7	2	3	0	2	0	0	0	0	0	0	0	0	49
***ER* solus TV**	12	4	12	3	12		3								12	4	14	3	12		3.1									
Press																														
D Nyheter W					1																									1
D Nyheter S							1							1							1									3
Metro Sth M-F				1	1													1												3
Metro Gth M-F				1														1												2
Metro Sth Sat						1																								1
Kvallsposten S							1							1																2
Total Insertions	0	0	0	2	2	1	2	0	0	0	0	0	0	2	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	12
***ER* solus press**	0	0	0	5	8	2	7							6				5			6.7									
***ER* Print/TV**	0	0	0	1	2	0	1											1			1.2									2224
Synergy +25%	0	0	0	1	2		2											1			1.5									
TER Sch 2	12	18	28	36	57	58	68	67	67	65	64	64	63	67	78	81	93	99	109	107	116	114	112	110	108	106	103	101	99	2266
Schedule 3 Press alone																														
Week No.	**1**							**2**							**3**							**4**							**5**	
	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	
Dagens Industri			1		1							1							1											4
Finanstijd					1							1							1											3
Afton bladet W			1	1	1						1	1																		5
Afton bladet S							1							1							1									3
Metro Sth M-F			1	1	1						1																			4
Metro Gth M-F																														0
Metro Sth Sat						1							1							1										3
Kvallsposten W			1	1	1						1																			4
Kvallsposten S							1							1							1									3
GT weekday			1	1	1						1	1							1											6
Total insertions	0	0	5	4	6	1	2	0	0	0	4	4	1	2	0	0	0	4	3	1	2	0	0	0	0	0	0	0	0	35
ER	0	0	14	12	15	2	8	0	0	0	12	11	2	8	0	0	0	0	4.9	1.8	7.8	0	0	0	0	0	0	0	0	
TER Sch 3	0	0	14	26	41	42	50	50	49	49	60	70	71	78	77	76	76	75	79	79	86	85	84	84	83	82	81	80	79	1804