A better representation of Print audiences? By Peter Masson, Bucknull & Masson/SSL UK, (PDRF Madrid 2017)

Introduction

In the race by Publishers to measure their new digital platforms and create measures of 'total brand reach' to mask their declining print audiences, opportunities are being missed to enhance their Print audiences currently generated by the traditional print 'recent reading' ('RR') model. This model, as it is currently used, continues to place Print platforms at a serious comparative disadvantage to their digital competitors.

This paper discusses a series of low cost developments that can enhance the comparative position of Print Gross audience levels and demonstrate comparative reading quality strengths through a quite limited extension of the RR question set and an improved way of modelling the data in single vehicle and schedule evaluation.

Background

The Recent Reading model (used by the vast majority of readership surveys worldwide) provides an estimate of the **average number** of (target group) people during the **survey period** that are exposed to **any issue** of a print title during its **publication interval**.

In other words, the 'RR' model takes a period in time, namely the **publication interval** (e.g. a day for dailies, a week for weeklies and a month for monthlies) and asks respondents if they had read or looked at **any issue** of the title in the issue period immediately prior to their day of interview (i.e. Recent Reading and hence 'RR' model). This, of course, is very much simpler and cheaper than tracking a respondent's **reading events** of each **specific issue** of each title **across time**. Such longitudinal measurement, using continuously reporting panels, has always been applied to TV viewing events and happens now for Digital media and increasingly so for Radio. Print is now the exception in not providing event based data across time.

The inadequacies of the 'RR' model (for advertising sales and time-based media planning) have been well documented and can be addressed[1] but only with a much more elaborate and expensive data collection and modelling methodology.

However, we believe that each of the main limitations of the 'RR' model can be addressed in a practical manner with limited additional cost. These issues and additional data or modelling required are listed below:

1. No account is taken of the repeat reading of a single issue

The inclusion of the *multiple reading occasions* by each respondent during the period of time over which the magazine is being read, thereby more correctly representing Gross Contacts with the title.

2. The usual measure reports Issue Exposure and not Advertisement Exposure

The inclusion of the chance of the respondent passing an average page within the issue provides an improved estimate of the *advertisement audience*.

3. No measure of comparative contact intensity between titles/media types

The inclusion of amount of *time spent reading* the issue as a (relative) indicator of ad. OTS becoming an ad. communication

4. Readership is modelled as occurring all at once with no time dimension

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[1] **An improved method of collecting and processing readership data by Peter Masson and Dr. Paul Sumner, Bucknull & Masson. (WWRS Prague 2005)**

The dominant readership data collection method for nearly 3 decades has been 'Recent Reading' derived from a single interview survey. A Binomial convolution model (or some approximation thereto) is then used to calculate the usual schedule statistics (Net, Gross, average frequency/FD). This paper challenges the adequacy of this over-simple model in this complex multi-media age. The paper explores 4 principal inadequacies. These are:
1 Readership is modeled as occurring all at once with no time dimension; 2. No account is taken of the repeat reading of a single issue. Gross reach is underestimated for all magazines. 3. The usual measure reports issue exposure and not advertisement exposure; 4. The independence assumption which underpins the Binomial Convolution model is never tested, and sometimes clearly wrong. The paper then describes an improved approach, with examples taken from a full-scale trial conducted for Maglab (Magazine Association) in Belgium. The data required for this technique is a short-term panel. The techniques used to expand this short-term data to a multi-week panel are explained. The multi-week panel can then be counted to produce all the conventional statistics, and considerably more time based and multiple pick-up measures.

To simulate 'event based' time of advertising exposure for newspapers on a daily basis and for monthly magazines on a weekly basis.

'Multiple Reading Events' and 'Proportion of Issue read'

These first two issues need to be treated in tandem in order to create a more realistic estimate of the Gross Contacts provided by Print at the Ad. Exposure level that is more in line with Digital platform audience measures. Here every time a cookie from a particular browser 'hits' a page in a given time period, multiple Page Views (Gross Contacts) are registered. Given that the ad. is served and viewable that browser (visitor) is always viewing a page containing the advertisement. Thus, every Page View event, in a given time period, is included in the Gross measure as an ad. exposure opportunity (*although of course we cannot be sure the ad. is served/visible or that the Page View is not generated by non-human traffic or fraudulent cookies*).

In the case of print using the current RR model only one reading event is registered (ignoring potential Gross audience) but assuming that all readers will have an ad. OTS, even though it is not necessary to qualify as a reader to have read or looked at *all pages* only (in some versions of the model) to have read/looked at the issue for 'at least 2 minutes'. For decades it has been assumed, in a world where 'Reach' was 'King', these two issues balanced out when comparing print titles and there was not a need to reduce Issue levels to Advertising reach levels.

This may have been acceptable when comparisons were only being made *within* print. Now the competitive environment is entirely different and *cross print/digital platform comparisons* are the norm and where the *primary unit of value comparison is CPT Gross*. If readers of a print title have on average 2.5 reading occasions the Gross Contacts cost (CPT Gross) becomes 40% lower in comparison with Digital. Print cannot afford this current AIR cpt relationship with digital and it does not need to be so.

Time spent

That advertising communication takes place is primarily a function of the content relevance to and interest of the readers (and visitors). The medium carrying the message is not however entirely neutral in facilitating the advertising communication. It can 'command' the advertising attention (by size, sound and movement) and by the degree of time it 'holds' the reader/viewer and creates a favourable (relaxed and secure) environment for (advertising) communication to take place and be accepted.

Over the last 5 decades many 'QRS' (Quality Reading Surveys) have measured such attributes with rather limited degrees of success to link them to advertising recall, let alone sales. Nevertheless, it is clear that there are strong correlations between these magazine 'qualities' as they all basically derive from the underlying *frequency of reading* of the title. These qualities exist because (regular) readers value the content and environment and the physical representation of this is that they read it frequently, read more of the content, pick it up to read more often and spend more time reading it. This can be seen clearly in the following table 1.

Table 1 Women's Weekly - Sweden	Base pop	Magazine A reading frequency			Mag A
		1 or less	2-3 of 4	Nrly All ,All	AIR
Sample profile	3175	78.6	7.6	13.7	100
Pop 000/profile	1317	81	7.3	11.6	25.8
Selectivity	%^	*Index*	*Index*	*Index*	*Index*
No. of Pick Ups: 6+	1.8	12	337	560	319
Proportion Read: 50%+	20.7	44	235	404	241
Time Spend Reading: 40m.+	13.9	39	205	458	258
Very Much-Pretty Much					
Would miss magazine	11	31	199	518	280
Totally/Somewhat Agree					
Looking forward to mag	13.8	25	202	556	295
Feel akin to readers	2.7	7	49	780	359
Ads. give good info.	4.1	38	92	539	272
Purchase after seen ad.	1.1	21	157	615	315
Makes me discuss on Internett	0.3	0	356	635	332
Mag helps me to relax	12.7	31	175	536	282
Time for myself	13.2	33	169	523	277
Makes me try new things	6.7	27	188	551	288
Effects my point of view	2.9	24	39	671	314
Magazine is reliable	9.2	42	171	460	252
Trendsetting	2.7	25	34	664	315

Having used reading frequency combined with pick-ups and proportion read as the base for determining *ad. exposure opportunity* we recommend the use of time spent reading as the *relative indicator of advertising communication* and to display this as a 'soft' measure along-side Net and Gross reach, OTS, selectivity and cpt.

How should we measure, model and utilize these 3 question areas in the selling and planning process?

Data required

We require 3 additional questions for each of the titles that the respondent has read/looked at in the last X months.

1. Reading occasions
   Thinking of the last issue that you read of XXX: On how many occasions in total did you pick up that issue to read or leaf through by the time you had finished with it? (1, 2, 3, 4-5, 6-9, 10-14, 15-29, 20+).
2. Proportion of issue read
   Thinking of the last issue that you read of XXX: Approximately what proportion of all pages did you read or look at it by the time you had finished with it? (All, nearly all, about three/quarters, about half, about a quarter, less).
3. Time spent reading
   Again, thinking of the last issue that you read of XXX: approximately how much time did you spend reading that issue before you had finished with it? (< 5m, 5-15m, 15-30m, 30-60m, 1-2hrs, 2+ hours).

Note should be taken of the importance of getting respondents to consider their responses in relation to the point when they will have finished with the issue. Not to the current point at which they are interviewed. It necessitates a degree of normative behaviour being introduced into their responses.

We need response to all 3 questions for all respondents in the data base who pass the initial filter for each title (normally 'read the last 12months'). In almost all countries these days, while AIR is the unit of comparison between titles, it is derived from ALL respondents who pass the 12-month filter being attributed a probability of reading in the Average Issue Period.[2]

However, it is not realistic to ask infrequent readers to recall their behaviour in relation to a 'last' issue that may have been read several months ago (and doing so also lengthens the questionnaire). So, it would be normal to restrict these questions to those reading in the last 4 weeks for dailies (which should contain 60-70% of the 12- month audience) and in the last 3 months for weeklies and monthlies (which should contain 40-60% of the 12-month audience).

Respondents missing these data can be ascribed it. This can be a very well controlled ascription since we can ascribe title by title within frequency of reading each title (sort variables) and then control the match by a range of appropriate distance variables like gender, age, education, region. This applies to both multiple reading occasion and proportion read questions as well as time spent reading.

The R&F model requirements

The data collected must be *retained and used at the individual respondent level* and not at an aggregate level, as has usually been the case where this (QRS) data has been collected independently of the NRS data[3]. To do so loses all interlaced relationships between target data, reading frequency data and quality of reading data.

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2 Typically, each respondent is attributed a probability of reading an average issue of a title based on a cross between the frequency scale and the recent reading scale. If the title had 100 '4 out of 4' issue readers out of whom 90 read in the last issue period then,' 4 out of 4 readers' would be attributed a probability to appear in an average issue of 0.90. Alternatively, theoretical probabilities can be attributed where '4 out of 4' claimants would be attributed a probability of 1.0, '3 out of 4' readers a probability of 0.75 etc.

[3] **Integrating QRS data (and Internet panel data) into the Swedish NRS (Orvesto): Peter Masson, Bucknull & Masson, UK and Peter Callius, Research International, Sweden (WWRS Vienna 2007).**

This paper explains the concept used by Orvesto of creating a 'host' survey providing 'skeletal' information about a wide range of media, which when calibrated to or ascribed with additional media data which essentially 'single source' in terms of media duplication and target group relationships. The paper explains the use of multi-step ascription to integrate an independent 'Quality of Reading' Internet based survey (quota controlled by reading frequency within each title) into Orvesto at the individual respondent level. It then provides the seller and planner many insights into advertisement exposure/engagement differences title by title and can be directly used in the normal media planning process with Orvesto (NRS)).

Whether or not we use the binomial model or a counting model (for newspapers and digital) to determine duplications we have to keep track separately of a count of reading/visiting events for each respondent – (a 'Hits' count model) and be able to combine these 'hits' into the exposure frequency distribution based on the Net audience.

The probability to see each page is determined by the proportion of the issue claimed to be read (using the theoretical probability of each scale position) and is the sum of this probability for each respondent. Where each respondent has more than one reading event there is a chance that additional pages will be seen and we expand this chance using the binomial model.

Newspaper case examples using the additional metrics

The first table (2) shows the comparative position of three newspaper *brands* (Source data: Focus-Bari NRS Greece). Costs attributed are hypothetical but represent likely relationships. For each of the brands the first row in each panel reports the *Internet* site, the second row the newspaper with *standard AIR metrics* and the third reports the magazine with the *extended metrics*.

Table 2 Target :Take reg. exercise		TRP's	Tgt net	Tgt	Av.Time (mins)		Selectivity		Tgt CPT
Weekly reach	AD X	%	%	Av. OTS	Total	Per visit	Gross Indx	Net Indx	Gross €
Sunday/weekly newspapers									
Site 1 (week)	1	43.8	10.3	4.3	25.9	6.1	98	107	132
Title 1 (week) AIR	1	6.1	6.1	1	47.8	47.8	101	101	512
Title 1 (wk) AIR+QRS	0.79	9	4.8	1.9	60.2	32.5	86	100	347
Site 2 (week)	1	50.8	7.8	6.5	29.9	4.6	122	126	123
Title 2 (week) AIR	1	2.2	2.2	1	37.2	37.2	118	118	545
Title 2 (wk) AIR+QRS	0.84	3.4	1.8	1.8	44.1	24.2	104	118	354
Site 3 (week)	1	80.7	13.9	5.8	49.5	8.6	116	116	100
Title 3 (week) AIR	1	2.4	2.4	1	34.9	34.9	119	119	360
Title 3 (wk) AIR+QRS	0.84	4.5	2	2.2	41.6	18.6	119	117	192

In this (Greek newspaper) market the digital platforms of the 3 (main) weekly newspapers outperform in (potential) Net reach terms their print platforms 3:1 in weekly reach but in Gross Reach terms, using AIR, the ratio is 17:1

The effect of including the 'proportion read' and 'pick-ups' metrics is similar for all 3 newspaper titles. This average ad. page exposure measure drops Net reach by around 20% but those in the Net audience have on average around 2.0 pick-ups. This means that the digital/print ratio is improved to 10:1

We should also bear in mind when viewing the Gross measures between Print and Digital, one would almost *never buy the whole of the inventory* available in the week. If one was to buy a 10% SOV then the Gross volume deliverable by both Print and Internet becomes similar.

CPT Gross for the 3 print titles is reduced by around 35%. (Note: not 50% as the 2 'pick ups' might suggest as they apply to the (20%) reduced Net ad. level audience).

It is also of note that the Index of target selectivity has also reduced for the first two print newspapers meaning that those who were making the most pick-ups were less selective of the target audience. We must therefore expect differences between target selectivity in the Net and Gross measures (in either direction). It is however, interesting to see in this (recall) data that the target Net profile (Selectivity Index) is very similar in for the print platform and the digital platform.

Turning to the final qualitative measure we see that the three digital platforms enjoy, on average, 35.1 minutes of time on site compared to 48.6 minutes for the average issue reading time. But more telling is the time per visit to the digital platform which is 6.5 minutes compared to per reading occasion for the print platform of 25.1 minutes – and the cost ratios are based approximately on a banner ad representing perhaps 5% of the screen view and a half page print advertisement.

Magazine Brand case examples (Table 3)

Table 3 Target definition: Exercise regularly		TRP's	Tgt net	Tgt	Av.Time (mins)		Selectivity		Tgt CPT
Monthly Reach	ADX	%	%	Av.OTS	Total	Per visit	Gross Indx	Net Indx	Gross C
Site 1 (mnth)	1	5.5	0.9	6.1	133.6	21.9	141	130	109
Title 1 (mnth) (AIR)	1	5.3	5.3	1	25.2	25.2	135	135	603
Title 1 (mnth) (AIR + QRS)	0.97	17.7	5.1	3.4	25.9	7.5	133	135	183
Site 2 (mnth)	1	58.6	1.8	32.6	50.8	1.6	130	124	122
Title 2 (mnth (AIR)	1	4.5	4.5	1	35.7	35.7	129	129	581
Title 2 (mnth) (AIR + QRS)	0.96	20.4	4.4	4.7	37	7.9	132	120	170
Site 3 (mnth)	1	4	1.1	3.6	95.2	26.4	140	128	102
Title 3 (mnth) (AIR)	1	5	5	1	24.9	24.9	130	130	494
Title 3 (mnth) (AIR + QRS)	0.97	23.3	4.9	4.7	25.6	5.4	132	130	104

In this (Greek magazine) market the Internet Gross Reach is a far less dominant platform than for newspapers (even allowing for the potential digital reach to accumulate for the month). The Gross reach ratio is digital 4.7:1 magazines. Adding in the 'proportion read' had limited impact on magazine Net reach – a loss of only 3-4% for advertising reach and the pick-ups were much more significant than for Press with an average of 4.3 pick-ups bringing the Gross Reach ratio with digital almost to parity at 1.1:1

The CPT improvement for magazines is much greater (75%). As the ad. exposure reach was small, the pick-ups were over 4 per issue and there was no loss overall in Gross Target Selectivity compared to Net.

4. Readership is modelled as occurring all at once with no time dimension

Daily Reach of Daily brands

We simulate 'event based' time of advertising exposure for newspapers on a daily basis to bring the print into line with the event based data of their digital platforms (which provides daypart visiting by day by site). We create a 'Virtual' diary of week events where all respondents with a week reading claim are distributed to each day according to their frequency claim.

To derive day by day levels for all daily newspaper titles the respondent read in the last week we ask:

On which days in the last week do you read or look at title XXX? Depending on the day of interview we prompt going backwards through the week. Did you read yesterday, the day before (that was Wednesday) last Tuesday, last Monday, last Sunday, Last Saturday, last Friday?

Table 4	Average day estimates %				
Question	NP1	NP2	NP3	NP4	NP5
AIR (RR)	0.60	0.40	0.40	0.60	0.70
Specific day	0.71	0.47	0.39	0.74	0.74
Frequency-Theoretical probabilities	0.65	0.40	0.45	0.71	0.80

Focus-Bari -Greek NRS 2016

This question is akin to a frequency scale. Normally we can expect the frequency scale to provide a higher estimate of daily reach when theoretical probabilities are applied and it usual practice to calibrate the probabilities to result in the 'recency' (yesterday) claim. In Table 4 above we can see this is the case in the above Greek data set (by approximately 10% higher).

The specific days of the week claims were 12% higher. We had expected to find the opposite with respondent forgetting one of more of the events over time, as we had found to a limited extent in Pakistan. We reported on this question set and subsequent

virtual week diary creation uses in Pakistan's single source cross platform study at WWRS 2009[1] but turned out not to be the case.

So we calibrate the day claim levels so that the average day matches the recency (yesterday) claim.

Of course, this creates a further extra question but the burden is quite limited as most respondents read only one or two dailies and seldom more than 4 in the course of a week. As the data base extends over time and the daily sample builds it start to provide the possibility to examine day by day results based on yesterday recall results These can used as day by day control levels and remove the need for this further specific day of reading questions.

The benefits to both publisher and planner of a common diary 'event based' data format are that they can schedule print including its QRS adjustments and digital platform together in day by day relationships 'buying' given proportions of digital inventory and multiple insertions per newspaper. Multiple daily events of reading and visiting are far from independent events making the binomial model approach totally inappropriate for estimating R&F across time.

Magazine time planning

The reason that we need time planning is to be able to exert control as to when advertising takes place to meet campaign OTS and awareness goals. With weeklies we largely know the week of exposure although 10-30 % may fall in later weeks. In monthlies we do not what happens through the month of publication and then there will be 5-15% of exposures that happen in later months.

From campaign weight distribution is arguable that weekly R&F information is acceptable. Although the standard Binomial model ignores time we can get around this limitation by dividing insertions up into weeks (i.e. a time plan) and evaluate each week separately and then accumulate R&F each week on week up to the end of the campaign.

Monthlies are not manageable in this way. However, we are able to use the binomial in 'reverse' and, instead of adding insertions to gain added reach, we 'reduce insertions. We make software think that the monthly is compose of 4 weekly insertions. When the planner enters one insert in the monthly the software treats it as 4-weekly insertions and applies the binomial in reverse from the 4 week reach to 3 to 2 to 1 week. Does it produce sensible results?

Net Reach accumulation index by week - monthlies

Belgium monthlies – WAR project specific issue averaged from 2 weeks of diary data expanded (Maglab 207)
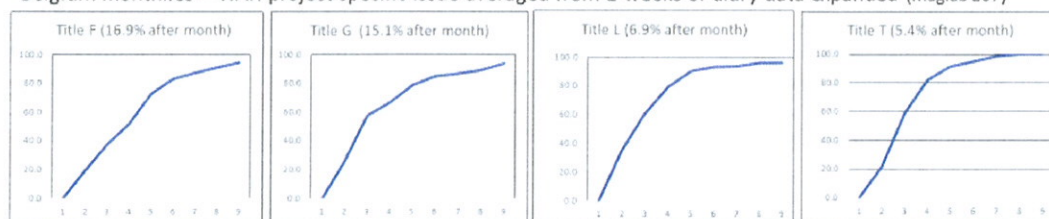
Greek monthlies (of similar nature) using binomial in reverse from 4 week down to 1 (Focus Bari NRS 2016)
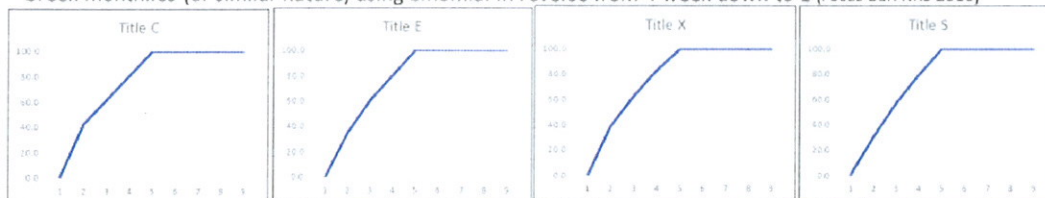
In the top 4 graphics we show the net reach accumulation of 4 monthly Belgium titles from the Maglab WAR project. In the lower 4 charts we show the curves for 4 similar monthlies for from the 'reverse' binomial using data from the Greek Focus-Bari NRS.

By definition the Greek curves reach a 100% (AIR) in week 5 (one month) and no more reach after this. The longitudinal WAR study shows on-going reach accumulation after week 5 (results were not capped at AIR). But the further net increases are actually not so great. The highest is an additional 17% net reach and the lowest only 5% additional Net. In the authors view this will not distort the time distribution analysis to any degree that would lead to significantly different time placement

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[4] **Pakistan goes Multi-Media with an Advertiser driven 'Single Source survey** by Peter Masson, Bucknull & Masson and Abdul Sattar Babar, MEMRB-IRI (WWRS Valencia 2009)

decisions AND Publishers do not have to invest half a million Euro+ to conduct a longitudinal study which can be extremely complex for planners to use.

We can take some confidence from the following analysis in terms of the structure of the audience the 'reverse' binomial produces for the week 1 audience compared to week 4 audience. We know from the WAR project that the first people to come into the audience are the regular readers and subscribers and as the issue lives its life it gets passed to less frequent and pass along readers. This is exactly what the first week profile shows compared to the 4-week (AIR) profile. Week 1 has 21.5% regular readers (4 or 3of 4 issues read) compared to the 4-week cume (AIR) of only 12.6%.

Table 6	Audience profile by reading frequency	
Issues	% Week 1	% Week 4
4 of 4	13.6	6.2
3 of 4	7.9	6.4
2 of 4	26.5	26.3
1 of 4	36.6	41.4
Less	15.4	19.6
	100	100

At the present time we have implemented this process in the Greek NRS but only for the standard AIR schedule net analysis. We will shortly implement the proportion read/pick up data so that these print benefits can carry through into the time-based planning

In summary

The RR model, as it is currently used, continues to place the Print platform at a serious disadvantage to their digital competitors. Without changing the essential structure of the Print single interview survey (large quality samples and extensive classification data) we have been able, through the addition of a small number of (not unfamiliar) questions and enhancements to the data modelling, to remove the main limitations of the RR model. Namely:

- The inclusion of repeat reading, leading to improved Gross cpt positions against digital platforms which include repeat visits in their Gross measure.
- Ad. exposure measures (as opposed to Issue exposure) providing greater comparability with the Digital and TV measures with a manageable degree of loss to AIR levels.
- A comparative ad. communication indicator with time spent reading.
- The modelling of readership as events through time permitting time planning within Print and in relation to the event based data of all other major media.
- And to have provided these advantages in an affordable manner in todays' economic climate for Print.