FACTORS CONTRIBUTING TO CHANGES IN READERS PER COPY

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Introduction:

Circulation is the main determining factor for the level of readership, but more factors contribute. This is why all magazines do not have the same number of readers per copy (RPC). Changes in readership may be caused by changes in circulation, but this paper shows that there would often be other reasons - and that we have to make publishers and advertisers understand, so that they will accept changes in their RPC-numbers and treat them as indicators of a change in their reader franchise.

1st. factor: Circulation.

Checking the **level** of readership by asking if respondents bought the paper/magazine themselves has had little success, because of confusion between members of the household and because of memory error resulting in telescoping, and questionnaire design resulting in replication. In addition, there is simply giving a wrong answer, i.e. prestige. Koning(1981), Langschmidt(1981) and Agostini(1983) have tried to make corrections by including weights and other subjective elements, but these elements make the calculations untrustworthy.

> Walstra(1983) has analysed the effect on RPC on changes in circulation:
> Declining circulation => RPC: +12%
> Increasing circulation => RPC: -13%

A likely explanation of this is that the extra buyers are to a large extent former pass-on readers. The expanded purchaser base is not matched by an expanded readership base, thus reducing the RPC. The reverse is also likely when circulation drops: former buyers may be more likely to read a copy they come across. The strength of this effect is likely to be dependent on the rate of change in circulation. Sharp changes should produce a more extreme change in RPC which may well come back to the predicted level if the new circulation is maintained.

Goerlich (1993) confirms this relationship, implying that the general relationship is not linear, but logarithmic:

$$\ln(AIR) = \beta_0 + \beta_1 \cdot \ln(C)$$

The β_1–value would in econometrics theory be an elasticity, so we propose to name it the elasticity of circulation; the expected value would be: $\beta_1 < 1.00$.

Data on readership and circulation from a range of countries confirm that the logarithmic model is better than the linear. Table 1 presents estimates of elasticity from all over the world, including cross-sectional and time-series data. Generally, the estimated elasticities are below 1.00.

Van Vliet(1987a) showed that data on circulation from Holland can be divided into subscribers and non-subscribers, so an elasticity of circulation can be calculated for subscribers ($\beta_1(s) = 0.64$) and for non-subscribers ($\beta_1(s^*) = 0.91$). The elasticity for subscribers is lower and this is logical because many of the new subscribers would have been previous pass-on readers and they would also tend not to pass-on the magazine as much as non-subscribers.

Would it be possible to use such a model for forecasting the readership of the next period from knowledge of the circulation? Danish and Dutch analyses - Mortensen(1995) and van Vliet(1987b) - show, that the width of the prediction intervals is generally too broad and exceeds a rule proposed by Leckenby and Kishi(1982): max. 5% error. The prediction band, the model and some examples are given in Figure 1 and Table 2.

Soley(1983) and Corlett(1982) have tried to bring in more explanatory variables apart from circulation.

- Soley for newspapers proposed: number of papers; time of day; population (city/country).
- Corlett for magazines proposed: price; and male/female ratio

Neither of these models can fulfil the Leckenby and Kishi(1982) rule. The Corlett model for British magazines is noticeably poor, but this might be caused by using recency as readership measurement - and this brings us to the next factor:

2nd. factor: General methodology.

A. Principles of readership measurement

In most countries the Recency method (RR) is used; other principles also in use are Through-The-Book (TTB), First-Reading-Yesterday (FRY), First-Reading-Recency (FRR) and Frequency (FRQ). The details of administering these methods are assumed to be known.

These methods have been shown to give different levels of readership; in particular the recency-method is under heavy attack because of its significant over-estimation of monthlies and weeklies (See Table 3) lately illustrated by Shepherd-Smith(1994). But the five methods seem also to react differently to changes in the real readership:

- RQ is measuring the generalised reading habits for a longer period, which means a low reaction to changes.

- RR also tends to give a slower reaction, due to telescoping and habits and the effect of replication. This can be seen from Gugel's (1993) study of changes in RR-readership and circulation for 83 American magazines; Gugel found 405 changes above 10%, but only nine of these involved both readership and circulation - and three of the nine were in the opposite direction.

- In the TTB-method, non-current issues are presented; this causes a certain time-lag, most noticeably in quarterly data. Also the effect of memory needs to be considered.

- FRY: Some of the reading probabilities are calculated on a basis of more than 1 year giving a sizeable a time-lag - and some are calculated on the basis of more than one paper/magazine. This makes the FRY-readership insensitive to changes. In addition, the FRY-readership's for monthlies - and some weeklies - are very unreliable due to the small proportion of the publication cycle covered.

- FRR-readership, like the other methods, is normally based on data from the last four quarters - a moving average.

In general, there is some time-lag from a change in the actual circulation to a reported change in the measured readership figures. One could consider up-weighting the most recent data (exponential smoothing), but then a further correction for any seasonality would be necessary.

B. Circulation.

Circulation numbers should not be accepted uncritically. It is not unknown for publishers to try to inflate the numbers by including overseas sales and contra copies and/or free copies (example: home/gardening exhibitions, hotels, airlines) and to exclude some of the returns. Also there might be some non-conscious errors in the circulation estimates.

In 1994 the (Australian) Audit Bureau of Circulations published for the first time circulation averages which showed Australian and overseas sales separately. Approximately 10% of sales[1] were revealed to be outside Australia. Subsequent analysis shows the overseas proportions of individual titles to be subject to variation but, for major established titles, to be increasing overall. One major title had over a quarter of its sales overseas in the most recent audit period.

C. Population.

The population size is used in the calculation of the RPC-values. There might be errors in these numbers as well - and when corrected, it will also influence the RPC-value. For instance the Australian Government recently revised its published population estimate downwards, in one region by 2.8%.

3rd factor: Sampling.

The proportion of readers of a paper/magazine is estimated via a sample, introducing sampling error. These errors can be quite large, if you look at segments of the population.

Example: Readership of a leading newspaper in Western Australia:
Jan-Mar '94: 53.0%
Mar-Jun '94: 49.8%

Is that a real decline? The quarterly sample size was 750, so the sampling error for the difference is 5.5% (assuming a simple, random sample), so the difference is not statistically by significant. The next quarterly readership's revealed, however, that the decline was significant (Jul-Sep: 48.7%; Oct-Dec: 47.8%)

When using the FRY-method, the sampling error is heavily inflated for monthlies and weeklies, because the "yesterday" estimate has to be multiplied by 30 or 7.

Example: 5% of the adult population is estimated to read a monthly magazine.
TTB: n=60,000 => 95% confidence limits $\pm$ 0.2% (Australia)
FRY: n=26,000 => confidence limits $\pm$ 1.5% (Denmark)
(assuming simple, random sampling)

The correctly calculated sampling errors would normally exceed the level of the sampling error for a simple, random sample, due to weighting and clustering. So the advice is to calculate the sampling errors - and do it correctly - and not to publish RPC-values with too high a sampling error (Leckenby and Kishi suggest 5%).

[1] Of "large" magazines (circulation over 100,000)

4th factor: Methodological changes.

Major methodological differences are well known to produce different estimates of readership and thus of RPC, so that a switch from one to another would produce a potentially large discontinuity in trends. This is illustrated in Table 3 which shows results from two large-scale readership surveys in New Zealand. There are some differences in the age ranges covered and the time periods but the major difference is in the methodology: Roy Morgan used specific-issue questions for weekly magazines, (fully TTB) and monthly magazine (front cover) while AGB:McNair used recency-frequency. The results show significantly higher readership figures for the recency-frequency method. The results are comparable for daily newspapers where recency (RR) was used.

In general, readership measurements have proved to be very sensitive to even minor changes in methodology.

The effects of methodology are further illustrated in Table 4. Of particular note here is the case of the New Zealand Woman's Weekly. This competes with imported UK and Australian magazines with very similar titles and similar content and it is clear that very specific probing is necessary to cut through the confusion. However the comparison of three different methods shows clearly that focussing the minds of respondents more closely on a specific issue of a title reduces over-claiming of readership.

1. Hess(1985): A change in the filter question gave 44% higher RR-readership among non-regular readers.

2. Belson(1962) and many others have documented the effect of rotation. When monthlies were moved from being the last group to being the first group, the RR-readership increased 35%.

3. Eadie and Lysaker(1983): When extending the FRY-readership question with "however briefly", the FRY-readership for weeklies was increased 30%, but decreased 10% for monthlies.

4. Speetzen(1986): The RR-readership declined 25% for "Schöner Wohnen" when "Zuhause" was included in the readership measurement.

5. Langschmidt and Brown(1979): When a new low-frequency class ("seldom") was introduced in a frequency scale (<1,1,...,6), the result was a 13% decrease in the "6 out of 6"-proportion.

So, whenever changes are considered, it is important to check for previously published experiments on the same kind of changes. In addition, a controlled experiment or parallel run should be undertaken before committing to the change.

When Roy Morgan decided to use TTB-readership for monthlies, an experiment was set up to estimate any difference in TTB-readership depending on using full issues, skeleton-issues or front covers (Morgan 1982).

Sequence of asking the question can also have an effect. Roy Morgan found less influence of replication levels if dailies were asked about first, followed by weeklies then monthlies. It is important to show similar magazines together to eliminate confusion.

The data collector or the body specifying the methodology is responsible for Factors 2-4 above. When readership measurement is questioned, these factors have to be considered before the last factor is analysed.

5th factor: Changes in the market place.

In general, readership measurements have also proved to be very sensitive to even minor changes in the market place, and the closer the data are examined, the more changes will be discovered - but make sure that they are statistically significant.

A. New entries - or withdrawals.

RPC is sensitive to even small changes in the number of titles. With the introduction of nine new dailies in the UK, the RR-readership and RPC-values of other (quality) papers dropped 33% (Beeson;1991).

Sections and inserted magazines seem to have a life of their own:

- In UK some RR-readership of inserted magazines exceed that of the host newspaper.
- In Australia 25-40% of the inserted magazine readers do not read the host newspaper - (Morgan;Davis;Gibson 1991).

Another problem is how to include readership figures not reported for the full reporting period. Grossed up estimates can be made based on the time period in which the publication was available. This works for seasonal publications (e.g. some sports magazines) but care must be exercised with new publications, which usually require at least a little time to build awareness.

B. Changes in existing magazines/papers.

A number of factors can change the measured readership in such a way that the RPC-values change:

I. The frequency of magazines

Examples:

- UK: When "Illustrated London News" changed from weekly to monthly in the 70's, the RR-measured RPC-value increased from 7.9 to 18.5.
- RSA: When "Personality" changed from weekly to fortnightly, the FRQ-readership increased 15%, while "Scope", changing from fortnightly to weekly, dropped by 33% - and there were no change in circulation or concept of the two magazines.
- Australia: There was a 40% increase in circulation when a magazine changed from a weekly to a monthly, while the readership measure increased by 17%. Tansey(1985) considered that to be evidence of an erroneous measurement of the readership (FRR for weeklies and front-cover TTB for monthlies). But the way people buy and use a magazine depends heavily on the frequency, so this drop in the RPC-value of less than 20% could easily have been caused by the change in frequency.

II. Publication format

The actual size, number of papers and content all affect readers per copy.

III. Publication content, new sections

Increase in the number of sections in a newspaper can change the readers per copy.

IV. Marketing and promotion.

Among viewers of the Australian TV programme "Better Homes and Gardens" readership of gardening/homemaker magazines is typically double the all-adults average. However, readership of the associated "Better Homes and Gardens" magazine is more than three times the average. In the first six months of 1995, when the "Better Homes and Gardens" TV program was shown, compared with the previous six months, circulation increased by 5% but readers per copy went from 4.7 to 6.5.

Some of this increase in the readership estimate may be due to confusion with the TV program or with magazine covers shown on the TV program, but this would be minimised by the data collection procedure which uses photo-reduced color front covers and asks about reading of the specific issue shown. It would be interesting to speculate about what would have happened to readership estimates and RPC if the recency/frequency method had been used!

C. Changes in audience/population.

Most of us tend to compare last year's readership with this year's readership, thus partly forgetting that the population and its way of living changes slightly all the time. This is due to a number of causes.

I. Changes in demographic/resident profile. For instance in the last ten years in Australia there have been a rise in the 50+ population, a decline in the teenage population and a rise in the median marriage age, with a resulting significant shift in the population profile.

II. Changes in people's leisure time-behaviour. The growth of PCs, particularly as an entertainment medium, many reduce the total amount of time spent in reading.

III. Changes in people's professional life. The growth, for instance, of readership of computer magazines may affect the amount of time spent reading general-interest magazines, especially by pass-on readers.

These changes can result in changes in overall readership. When advertising was introduced on Danish TV, overall readership dropped significantly.

Changes in the number and mix of weekly and monthly publications read can have an affect. In the last three years there have been three successful launches of *weekly* magazines in Australia, now account for more than 15% of audited magazine copies between them. It must be remembered that a weekly magazine puts four times as many copies into circulation as a monthly magazine. If the amount of total reading is relatively inelastic, the introduction of a weekly can have a greater impact on monthlies than its average circulation figures suggests.

Conclusion

The examples of this paper have shown that there are many factors which contribute to changes in readers per copy for newspapers and magazines. Most often, the cause for an increase or a drop in RPC is to be found in changes in the market place - and it is then the obligation of the publisher - in cooperation with the data-collector - to investigate. However, a change in the RPC-value could be caused by the methodology or changes in the methodology or just be variations within the sampling error. These possible causes should be investigated by the data-collector before releasing the readership measurement.

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TABLE 1: Estimates of elasticity of circulation

Cross sectional data:

Country (method)	Media	$\hat{\beta}_1$	R^2
USA (TTB)	21 magazines	0.86	77%
USA (RR)	28 magazines	0.82	72%
Canada (TTB)	12 magazines	0.87	72%
UK (RR)	17 weeklies	0.68	81%
Germany (RR)	20 weeklies	0.89	87%
Finland (RR)	17 female mag.	0.84	59%
Denmark (FRY)	30 magazines	0.67	98%
Denmark (FRY)	50 dailies	0.99	98%
USA (ARY)	20 Sunday pap.	0.56	59%
USA (ARY)	20 dailies	1.01	96%
France (RR)	7 dailies	2.20	49%
South Africa (FRR)	21 dailies	0.91	93%

Time Series data:

Country	Media	$\hat{\beta}_1$	R^2
Belgium	11 dailies - 9 years	0.98	98%
South Africa	1 daily - 9 years	0.48	92%
Belgium	11 magazines - 9 years	0.90	86%
Belgium	1 monthly - 6 years	0.82	83%

Figure 1: Prediction bands, Danish media.

Dailies:

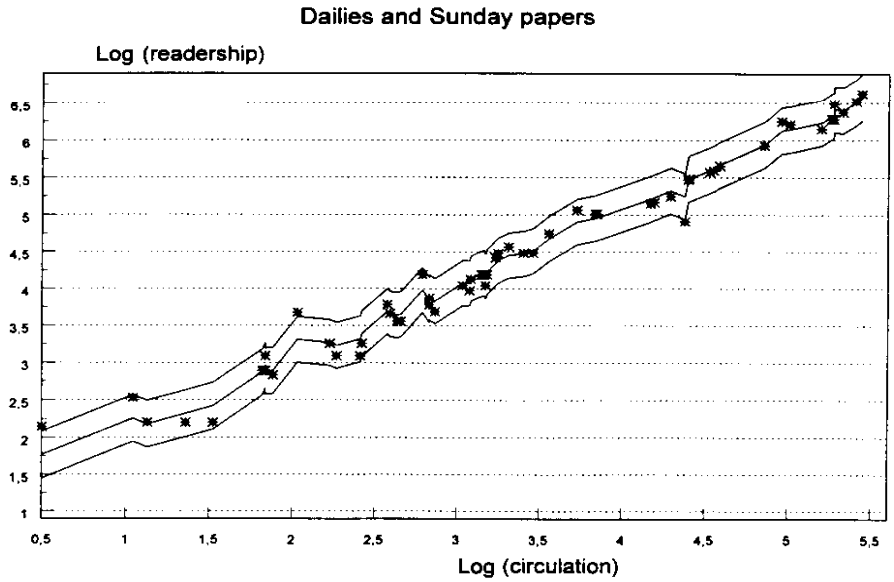

TABLE 2: Prediction intervals.

Model:

$$\ln(AIR) = 2.97 - 1.91\,D + 0.67\ln(C) + 0.32\,D\ln(C) + 0.66\,P$$

D=1 for dailies and D=0 for magazines.
P=-1 for negative prestige and P=1 for positive prestige.

Some results:

Media	Circulation	RPC- value	Estimated RPC- value	Prediction interval
Baad-nyt	23,400	7.3	7.0	4.7-10.3
Borsen	41,600	3.8	2.9	2.0-4.2
EkstraBladet	206,200	2.8	2.9	1.9-4.2
Femina	85,900	3.3	4.5	3.1-6.7

TABLE 3: Readership Estimates - New Zealand

	Roy Morgan Apr 91 - Mar 92 Age 14+ %	AGB:McNair Jul 91 - Jun 92 Age 10+ %
Weekly Magazines	First-time reading	Recency
(NZ) Woman's Weekly	23	36
(English) Woman's Weekly	3	7
Woman's Day	18	26
Metro	7	11
New Idea	11	21
Time	4[1]	9
Monthly Magazines	Photo reduced front covers	Recency
Reader's Digest	19	28
North and South	10	14
Australian Women's Weekly [2]	25	33
NZ Geographic	5	12
Daily newspapers	Average of specific day readership	Average day readership
NZ Herald	22	23
Dominion	8	7
Evening Post	7	7
Christchurch Press	10	9
Sunday newspapers	Read in last 7 days	Recency
Dominion Sunday Times	6	6
Sunday News	13	18
Sunday Star	10	11

[1] Measured by full "through-the-book" (TTB)
[2] Former weekly magazine published monthly

TABLE 4: Readership and RPC Estimates - New Zealand

	AGB/NRB Aug 92-Jul 93 (Recency) Age 10+		Roy Morgan Oct 92-Sep 93 (First-time reading) Age 14+		Roy Morgan Sep-Nov 93 (TTB) Age 14+	
	%	RPC	%	RPC	%	RPC
NZ Woman's Weekly [1]	36	6.5	22	3.9	14	2.6
Woman's Day	28	4.0	21	2.8	19	2.5
New Idea	22	6.0	12	3.1	10	2.6
TV Guide	30	3.8	21	2.4	18	2.1
Listener	18	4.4	13	3.0	11	2.5
Time	9	6.4	4[2]	2.9	4	2.8

[1] Non-TTB figures indicate significant inflation due to confusion with English Woman's Weekly and Australian Women's Weekly (a monthly magazine).

[2] In this period, measured by full "through-the-book" (TTB).