

THE RELATIONSHIP OF CHANGES IN CIRCULATION TO CHANGES IN TOTAL AUDIENCE

Bruce Goerlich, D'arcy Masius Benton & Bowles, Inc.

Introduction

In the magazine advertising sales business in the United States of America, as in most countries, the concept of total magazine audience is used to sell advertising space to agencies and advertisers. The Total Audience is derived most often through syndicated research studies. From the relationship of Total audience and Circulation a magazine's Readers Per Copy can be developed.

$$\frac{\text{Total Audience}}{\text{Circulation}} = \text{Readers Per Copy}$$

As Timothy Joyce has noted, this equation describes magazine supply and demand, supply being the number of circulated issues and demand being the number of Readers Per Copy (R.P.C.).

An advertising sales person implicitly invokes this equation when her publication's rate base changes. Advertising agencies are asked to change the projected total audience produced by a syndicated research service, by multiplying the new circulation times the historical R.P.C. The new projected Total Audience would then become the number the agency would use to evaluate the publication. With some modification, DMB&B used this technique from the time of its merger in 1986 through 1991¹.

As part of a review of DMB&B's magazine planning procedures in 1991, we undertook an evaluation of the relationship between changes in circulation and changes in Total Audience. We wanted to see if the equation did in fact hold true. If so, we could continue to adjust for prospective circulation changes. If not, the adjustment process would not continue to be utilized.

Analysis

We decided to pull data from MediaMark Research Inc. (MRI), our service of record, for the top twenty publications that DM&B does business with. We buy space in over 1500 publications annually, but the top books account for the bulk of the dollars spent in the industry. We felt that if circulation changes did not relate to audience changes with these very important books, it was not of any great import to our clients if a relationship existed with "minor" publications. (We did drop one book because, being a Sunday newspaper supplement, it was not measured by MRI on all the variables we wanted to examine).

For each magazine we computed the difference between 7 successive MRI survey waves from Fall 1986 to Spring 1990 in: Total Audience, Circulation, Readers-Per-Copy, percent primary and secondary audience, and percent in-home and out-of-home readership. Across all the surveys, we simply compared each magazine's changes in Circulation with its corresponding changes in Total Audience, R.P.C. and so on, to see if any fit could be established. Figure 1 lays out the approach.

1. DMB&B modified this equation in two basic ways. The first was to only adjust audience delivery for circulation changes of greater than +/- 10%. The second modification was to match the announced circulation changes to the 48 state continental U.S.A. delivery, as that is the only audience that MediaMark Research Inc. measures.

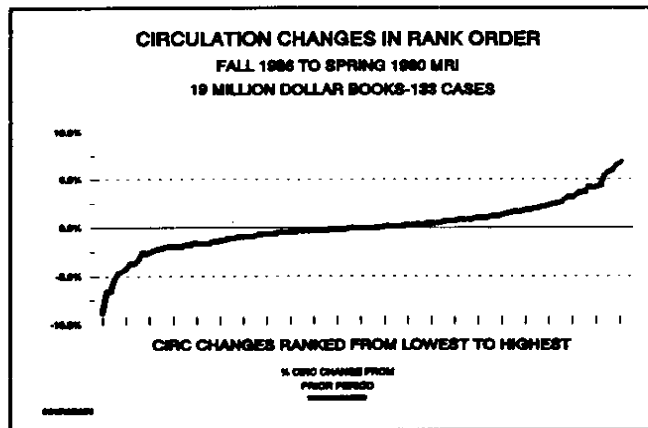


Figure 1

This line shows all the 133 cases of circulation changes for the 19 magazines in the analysis, ranked from the "lowest" rate of change of an 8.7 percent drop for *Woman's Day* between the Spring 1990 and Fall 1989 surveys, to the "highest" rate of change of a 6.8 percent gain for *People* between the Fall and Spring 1988 surveys.

If audience changes were directly correlated to Circulation changes, we would expect to see the shape of the audience change line mirror the shape of the Circulation change line. That is, as Circulation fell, reported audience would fall as well. As Circulation rose, we would expect to see Total Audience grow as well.

In addition, we hoped to find logical relationships between changes in circulation and changes in audience. A magazine's total audience consists of those people who purchase the publication - "Primary" readers - and those people who read a publication purchased by someone else - "Secondary" readers. This is another way to express the "demand" side of the equation. If a publisher makes a supply side decision to adjust the circulation, we might expect demand not to change. Therefore, if circulation grew, total audience might remain stable, but the number of "Primary" readers would increase. This would be akin to a brand manager converting "occasional" users to "sole" users.

What we found, however, was that changes in circulation bore little relationship to changes in audience. The chart following (Figure 2) is representative of all the data comparisons.

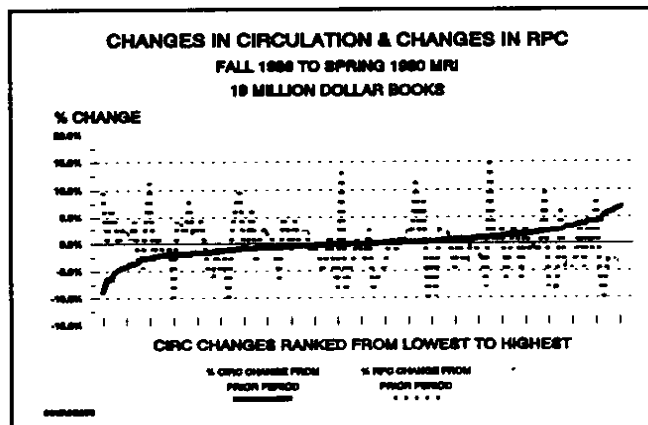


Figure 2

Table 1 lays out the Correlation analyses for each data comparison.

Table 1

REGRESSION ANALYSIS OF THE CHANGES IN CIRCULATION TO CHANGES IN SEVERAL AUDIENCE MEASUREMENT VARIABLES

VARIABLE	r ²	B	Sig f
Total Audience Change	.00	.05	.64
R.P.C. Change	.23	-.30	.00
In-Home Audience Change	.00	.03	.85
Out-Of-Home Audience Change	.00	-.02	.85
Primary Audience Change	.10	.27	.03
Secondary Audience Change	.10	-.31	.03

n = 133

These data told us that no relationship existed between changes in circulation and changes in total audience. A significant but very small relationship was found between the primary and secondary audiences and circulation. (The direction of the β coefficients confirm our hypothesis that, as circulation grows, the primary audience would tend to increase, and the secondary audience would tend to decrease. However, the amount of variance explained is quite small). The largest amount of circulation variance explained was through the R.P.C.'s, with a negative β coefficient. In short, this relationship indicates that as circulation goes up, R.P.C. tends to go down, resulting in a stable audience level.

After we examined these results, we felt that established publications might have already reached a level of maturity at which circulation change no longer has a real impact on audience size. We felt that newly measured books, being fresher to the fray, might show more of a relationship between circulation and audience levels.

To test this hypothesis, we pulled the rate of change data for nine newly measured MRI publications from the Spring 1987 to the Fall 1991 waves. Some books stopped being measured, and not all were measured for the entire period, so we had a total of just 56 cases.

We performed the same sorts of analyses on these data as before. And, as before, we found the same lack of relationship between circulation changes and the other variables, as Table 2 indicates.

Table 2

REGRESSION ANALYSIS OF THE CHANGES IN CIRCULATION TO CHANGES IN SEVERAL AUDIENCE MEASUREMENT VARIABLES IN NEWLY MEASURED BOOKS

VARIABLE	r ²	β	Sig f
Total Audience Change	.00	.20	.63
R.P.C. Change	.17	-.65	.00
In-Home Audience Change	.00	-.13	.70
Out-Of-Home Audience Change	.01	.28	.48
Primary Audience Change	.00	.17	.70
Secondary Audience Change	.01	-.24	.39

n = 56

No relationship was found between total audience and circulation changes for new books. While no strong relationship was found for primary audiences, the direction of the β coefficient was again positive, and a small but significant inverse relationship was established for secondary audience changes. Again, we found a small, (R^2 of .17) but statistically significant inverse relationship between circulation and R.P.C. Figure 3 shows what the R.P.C. to circulation comparison looks like.

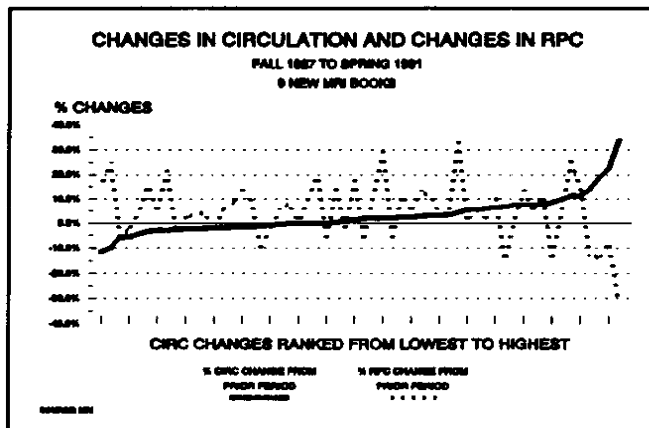


Figure 3

The careful reader will note that the R.P.C. line tends to slope down in the opposite direction from the circulation changes, as confirmed by the negative B coefficient. This could lead one to the startling interpretation that newly measured books have already reached a level of audience stability relative to circulation.

We were not comfortable with that point of view. We noted that the slopes of the two lines seem to fit together quite well at the extremes of circulation changes. We then reanalyzed two sets of data, using circulation changes of plus or minus ten percent for the new books, and plus or minus five percent for the major books we had examined before (none of which had circulation changes of ten percent). Again, the only large and significant relationship we could find was between circulation and R.P.C. As circulation goes down, R.P.C. tends to go up, and as R.P.C. goes down, circulation tends to go up. Figures 4 and 5 illustrate the results, with Tables 3 and 4 showing the details. Only nine cases were involved here, so the data are not robust.

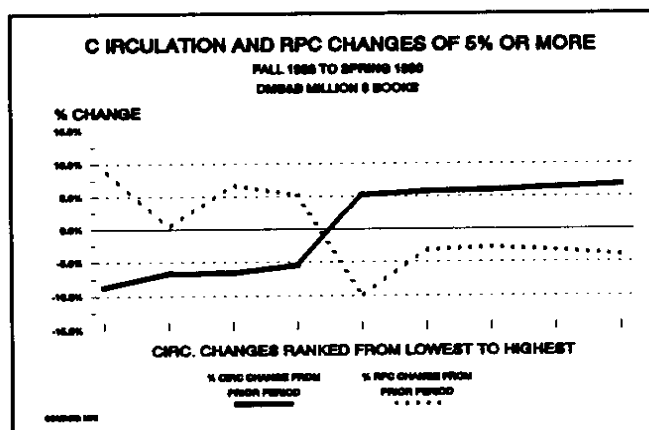


Figure 4

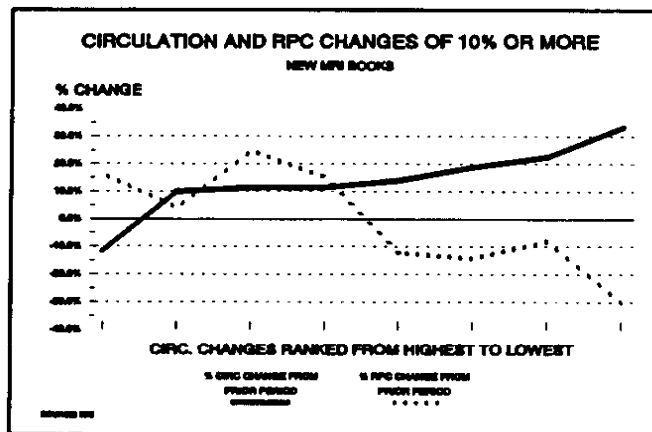


Figure 5

Table 3

REGRESSION ANALYSIS OF THE CHANGES IN CIRCULATION (+/-5%) TO CHANGES IN SEVERAL AUDIENCE MEASUREMENT VARIABLES FOR ESTABLISHED BOOKS

VARIABLE	r ²	B	Sig f
Total Audience Change	.10	.65	.40
R.P.C. Change	.74	-.97	.00
In-Home Audience Change	.16	.36	.28
Out-Of-Home Audience Change	.35	-.53	.09
Primary Audience Change	.26	.80	.17
Secondary Audience Change	.19	-1.46	.24

n = 9

Table 4

REGRESSION ANALYSIS OF THE CHANGES IN CIRCULATION (+/-10%) TO CHANGES IN SEVERAL AUDIENCE MEASUREMENT VARIABLES FOR NEWLY MEASURED BOOKS

VARIABLE	r ²	B	Sig f
Total Audience Change	.02	-.36	.76
R.P.C. Change	.56	-1.09	.03
In-Home Audience Change	.06	-.27	.55
Out-Of-Home Audience Change	.10	.21	.44
Primary Audience Change	.04	.23	.63
Secondary Audience Change	.06	-.17	.56

n = 9

Discussion

Our bottom line lesson from all this was that no simple one to one relationship exists between changes in circulation and changes in audience. Reader Per Copy is not a simple, fixed quantity. Therefore we stopped adjusting syndicated audience estimates to reflect circulation changes. We felt that we could not unilaterally alter the potential spending of our clients' money, based on such a weak relationship.

However, this raises the question of why the relationship between circulation and audience changes seems to be so weak. First off, we should realize that, as Steven Douglas and Mark Munn have indicated, different types of circulation generate different levels of readership. Specifically, copies circulated in high traffic, out-of-home locations generate higher Readers-Per-Copy. Circulation adjustments are rarely distributed evenly, which would impact equally at every distribution point. In fact, circulation changes are often driven by financial not total audience considerations. Publishers rightly view circulation as a major source of revenue. Therefore many circulation decisions are based on their projected profitability. For a given point of distribution, the margin of profit is projected by comparing the cost of adjustment and the expected rate of return.

Total audience is weakly related to circulation but can be strongly affected by other variables. Val Appel noted that audience levels can be greatly influenced by screen-in levels. To the extent that screen-in indicates familiarity, then audience levels, too, can be considered influenced by factors that may increase or decrease knowledge of a given publication. Among those factors are logo changes, television advertising and title confusion. Lag time could also be a factor. Ingemar Lindberg has noted that readership often falls prior to a circulation drop. This could simply reflect the internal business dynamics of the magazine. The publisher gets signals that interest in the book is waning, and he cuts back circulation. We did not examine the lag effect, or any of these other variables, because the adjustment model would have been too complicated to apply in our day-to-day business.

We did find a consistent, yet weak relationship between changes in circulation, and changes in primary/secondary audience. There does seem to be a slight conversion of secondary to primary readers as a book's circulation grows. However, other variables seem to cloud this relationship.

In short, no simple relationship between changes in circulation and changes in magazine audiences appears to exist. Therefore, simple adjustments to audience levels on the basis of announced rate base changes do not seem to be called for.

Bibliography

Appel, Valentine "Anatomy of a Magazine Audience Estimate: The ARF Comparability Study Revisited" Readership Research Symposium V: Hong Kong, February 1991

Douglas, Steven "How Copies Produce Audience: the Dynamic Model" Proceedings of the Readership Research Symposium II: Montreal, 1983

Joyce, Timothy "Magazine Readers Per Copy," Journal of Advertising Research, Volume 14, Number 6, December 1974

Lindberg, Ingemar "Circulation and Readership: Trend Analysis" Proceedings of the Readership Research Symposium I: New Orleans, 1991.

Munn, Mark D. "Public Place Distribution; The Effect on Magazine Audiences of free distribution in selected reception areas" Proceedings: Montreal, 1983.