PERSONAL IN-HOME INTERVIEWS VERSUS SELF-ADMINISTERED MAIL PANEL : DOES IT REALLY MATTER FOR MEASURING PRINT AUDIENCES?

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Abstract:

Mail procedures are not the usual way of conducting press audience surveys. However, when directed to panelists, mail surveys are a low cost mean of building single source data sets. In this paper, we discuss the various biases that might occur in mail audience surveys. Drawing on an extensive literature review, we test five hypotheses that summarize conventional wisdom about the respective effects of mail and personal interviews on audience level, reading frequency and audience accumulation. We use data from two large French audience surveys on print media. The first one, conducted by AEPM, uses face-to-face interviews on 15000 respondents. The second one was conducted by mail, on the 6198 respondents among NIELSEN SCAN 9000 panelists. Overall, we provide evidence that, contrary to common assumptions, self-administered surveys can be an efficient tool for measuring print audience.

Keywords

Face-to-face surveys, Magazine audience measurement, Self-administered Mail Panel.

Introduction

Face-to-face surveys are the favored way of collecting data for press audience measurement. The presence of interviewers permits to control respondents' identity and the rotation of screening questions. It insures that all questions will be delivered in the proper order and it permits to check respondents' comprehension. Furthermore, the fact that the investigator does himself the coding and encourages respondents to give an answer to each question minimises non response rate. This type of survey can also deal with a large number of magazines.

However, the high cost of personal in-home surveys, the rise in respondents' refusal to answer and the difficulty of assuring maximum geographical dispersion of survey point, have lead to a great development in telephone surveys in some countries.

Self-administered audience surveys have not disappeared though: They are now either mostly used to collect data from panelists or part of a media product survey. The following table summarizes the different types of interviews (face-to-face/telephone/self-administered/postal self administered) used in the major press surveys in Europe.

Table 1- Readership measurement in Europe.

Country	Face-to-face	Telephone	Self-administered	Postal self-administered
Austria	MA / OVA		OVA°	
Belgium	CIM MP			
Bulgaria	MUB			
Denmark	DRB index	DRB index / DMMI		DRB index / DMMI
Finland	KMT			
France	AEPM	PQRN/FCA/FHR	AEPM	SIMM
Germany	AWA/MA			
Greece	Bari/NMS			
Hungary	MUH/SIM			
Ireland	JNRR		JNRR	
Italy	Audipress			
Netherlands		SUMMO		SUMMO°
Norway	NMI	FM	NMI°°	FM°
Poland	MUP / Pentor			
Portugal	Bareme/Euromedia			
Romania	MUR			
Spain	EGM			
Sweden		SM		OCRS/Selekt/SM
Switzerland		MACH B.		MACH B.°
UK	NRS / TGI°°°			TGI
Europe	PES			EBRS / NBRS
Total	25	9	4	12

Source: 1994 Report on Newspaper and magazine readership in Europe updated in June 95.

° = Consumer data are collected by self-administration in the same sample or in a sub-sample of the media survey.
°° = Self-completion questionnaires are used to collect detailed TGI data from a sub-sample of 3 000 respondents after the readership interview. The interviewer returns a week later to collect the completed questionnaires (96 % of success rate of those asked to participate)
°°° = The face-to-face interview is an initial contact interview for purpose of recruitment.

Face-to-face surveys prevail, followed by self-administered surveys and telephone surveys. Self-administered surveys are either complements to audience surveys (OVA, AEPM, JNRR, DRB Index or SUMMO) or are the self-administered mail questionnaires which have been the standard surveys for many years (TGI in UK, SIMM in France...).

Annex 1 gives the collection mode of main press surveys in Europe: media covered, number of titles, survey duration and sample size. Table 1 does not take into account self-administered audience questionnaires addressed to panelists. Nowadays, most of the research institutes which run panels complement these purchase data with audience data collected through a self-administered questionnaire. Thus, they can cross the purchase data collected from diaries or from scanners with the audience data collected from self-administered questionnaires (see annex 2).

1. Advantages and Drawbacks of a Self-Administered Audience Surveys

The comparison between collection modes is a unsettled issue since audience measurement entails a large number of parameters. We will analyse each of them successively.

a) Screening Question

This question is used to limit the number of titles on which respondents are surveyed. For example, this is how French AEPM surveys formulates such a question. " Personally, have you read, skimmed or referred, during the last 12 months, at home or somewhere else, xxx ? ".

In Denmark, Sweden and in the Netherlands, screening questions do not have any reference-period. In France and in Great Britain, the reference-period is the last 12 months, for weekly magazines as well as for monthly. In Germany and Italy, it is the past year, for monthly and the past six months for weekly. In Spain, screening it is the past six weeks for weekly and the past six months for monthly.

According to Brown, it is difficult to use screening questions in a mail survey. Even if it is incorporated, nothing guarantees that respondents will subsequently respond consistently with their answer to this question. However, it is always possible to double check the answer to the screening question with a question on reading habits.

b) Reading Habits

The answers to this question are used to model audience accumulation through successive issues. The scale most frequently used is numeric. It asks respondents to report the number of issues read among 12 issues (in Germany and Italy), or among 6 issues (in Denmark, Norway, the Netherlands and Switzerland). In Belgium and in Great Britain, on the other hand, habit scales are based on adverbs, whereas in France, they are based on temporal intervals which vary according to the weekly or monthly periodicity of the studied support. Whatever the formulation, the question does not raise any specific difficulty for a self-administered survey.

Here is the formulation used by Nielsen in France (nearly the same as the one used by AEPM in face-to-face) " Usually, how often do you read or skim, you personally, at home or somewhere else, an issue of... ? " There are 6 modalities of response for the weekly as well as for the monthly. The last modality " not read during the last 12 months " can be crossed with the screening question for double checking.

c) The Last Period Reading

This question is very important because respondents are declared readers when they report having read the support during the last seven days for a weekly publication or during the last 4 weeks for a monthly publication. This conception of the audience as the set of people who have read the publication at least once during the reference period, is called the last period reading (LPR). It is different from defining the audience as the readers of an average issue. Here, respondents are asked to skim through a given publication of a magazine, neither too recent nor too old, and to indicate whether he remembers having read or skimmed through it. This method called " through the book " has been used in the United States but has never been used in Europe. It is obviously impossible to use this method in a mail questionnaire survey.

The last period reading measure is not used in Belgium, Italy, Sweden, Switzerland, and Nielsen does not uses it in France. Indeed, Nielsen uses a simple dichotomous question: " Have you, personally, read or skimmed through, during the last 8 days (last 30 days) the following magazines ? "

For the AEPM face-to-face survey, the question is formulated as follows: " without speaking about yesterday or today, when for the last time, have you personally read, skimmed through or referred to an issue of XXX even if it is an old one, at home or somewhere else ? "

For weekly publication, the modalities of response are: "the day before yesterday", "3 or 4 days ago", "1 or 3 months ago", "3 or 6 months ago", "less often" and "not read in the last 12 months". This kind of scale, based on the graduation of the last reading date, allows for the validation of audience accumulation curves generated by media evaluation models.

In Germany, the scale has 4 modalities, with the first corresponding to the periodicity of the support. In Denmark and in the Netherlands, the " First Reading Yesterday " method is used. We ask the respondent if

yesterday he had read, skimmed through or referred to any magazine issue and if his reading was his first contact with the title. By this way, we obtain the audience by multiplying the number of " first reader yesterday " by the number of days between two issues. The FRY method only refers to the " yesterday memory ".

Unfortunately, two questions are used in practice : "did you read yesterday ? " and " was it the first time ? " Because of that, this method is difficult to use in a postal survey. In personal in-home surveys, we try to avoid the problem by asking when the last reading occurred. If the respondent answers "yesterday", then we count a " reading yesterday ". It is done exactly this way in the AEPM study for weekly and for monthly publications and other periodical publications. The AEPM study measures both " last period reading " and " yesterday reading " in order to assess repeat-reading. Still, for AEPM, the last period reading is the standard measure of press audience.

d) Other Reading Behaviours

Magazine provenance is collected in Belgium, in France and in Great Britain. It allows for the distinction between " primary reader ": the readers who effectively purchased the issue (personal subscription, self buying) and " secondary reader: the readers who did not purchase the issue (subscribed by someone else in the household, by the firm, delivered free at home, purchased by another person, lending, gift, or found).

The amount of reading is measured in Germany, the Netherlands, Norway, Spain, Italy and France. Reading duration is measured in the Netherlands, Spain and Denmark. The number of handling and reading places are measured in France.

All these aspects of reading behaviors could be measured without too many difficulties in self-administered audience surveys but, generally, they are not. Except for Sweden, these surveys are conceived as a part of media product surveys rather than as proper audience surveys. It is the same in France with the SIMM study. It was also the case for surveys developed in the USA by Timothy Joyce with TGI from 1972 to 1978, and with Nielsen Home*Scan service from 1991 to 1993. It is still the case with the TGI study, available in Great Britain since 1968.

This has also been the case of the survey conducted in France by Nielsen on a biennial base since 1993. More than 6.000 panelists, out of the 9.000 members of SCAN 9000, give usable answers. SCAN 9000 is a national household panel: its members shop in the 40 stores equipped with scanners. Panel members are identified with a card presented at the counter. Their purchases are complemented with causal store data on price, displays and sales promotions. The link with audience data is made through panelists' I.D numbers. This way, we obtain complete and individualized data which qualify as truly " single-source ". That is to say, a data base which enables to track the effects of all the elements of the marketing-mix on consumers' purchases. However, Nielsen self-administered audience measurements concern only 67 TV programs from Monday to Friday, 56 on Saturday, and 60 on Sunday, split among six French channels TF1, A2, F3, Canal + and M6 and also 8 national daily, 25 weekly, 2 bi-monthly and 44 monthly magazines. As for the radio, 6 stations are surveyed: Europe 1, Europe 2, RTL, NRJ, RMC and Radio Nostalgie.

Only the primary shopper (one household member) fills out the questionnaire. To carry on our analysis, we will make comparisons only between the weekly and monthly magazines surveyed simultaneously by AEPM and Nielsen.

e) Question Order

Questions order can have an influence on results. In Germany, Belgium, Spain, France and Italy, the sequence used is the following: Screening question => habits =>Recency question. In Denmark, Great Britain and the Netherlands, the sequence used is: Screening question => Recency question => habits. Some questionnaires adopt a vertical format while other use an horizontal format. In the vertical format, the same question is asked for all titles before the respondent is allowed to answers the next question. In the horizontal format, we ask all questions for a given title and then proceed with the next title.

AEPM adopts a vertical format for screening questions, for habits, for Recency question and for provenance. Of course, with self-administered questionnaire, we have no control on how respondents fill-in the questionnaire. The layout of Nielsen's questionnaire favors horizontal fill-in. We can imagine that respondents fill the questionnaire line by line, i.e., title by title. Respondents answer the reading habit and the Last Period Reading questions for one title and so on with the other titles. However, some respondents might answer column by column, using in fact a vertical sequence. In any case, it is important to notice that there is no rotation of titles in Nielsen's self-administered questionnaire, which can be prejudicial to the titles in the middle of the list. On the other hand, in the AEPM survey, interviewers alternate two kinds of

questionnaires; the first one begins with weekly, the second one with monthly, and they are advised to open the book of mastheads at random.

At that point of the analysis, convergences and differences between AEPM face-to-face and Nielsen self-administered surveys can be summarised as follows in table 2:

Table 2 Differences Between AEPM Face-To-Face and Nielsen Self-Administered Surveys

AEPM 1994	NIELSEN 1994
① Reference population	
French population over 15	Primary shopper of the household
15 000 face to face	9664 mailed questionnaires with a return of 6158 usable questionnaires
② Data audience measurement	
Screening filter on last 12 months reading	No screening filter on last 12 months reading
Rotation of titles	No rotation
Frequency (habits)	Frequency (habits)
Yesterday Reading	Not collected
Recency question (Last Reading Date)	Not collected
Last Period Reading	Direct question on Last Period Reading
Provenance	Not collected
Number of different issues read Yesterday Yesterday Reading Place Number of handlings Amount of reading	Not collected

2. Hypotheses on the Effects of the Mode of Collection

In this section, we examine the hypotheses formulated by experts about the consequences of using mail surveys for audience measurement. In this purpose, we reviewed the proceedings of the international congresses on audience measurement which took place in News-Orleans (1981), Montreal (1983), Salzburg (1985), Barcelona (1988), Hong-Kong (1991) and San Francisco (1993). We also examined IREP's last 10 years conferences annals and contacted internationally recognized experts such as Michael Brown (1990) and Timothy Joyce (1991, 1993). From this preliminary review of the literature, it appears that the effects of the mode of collection (face-to-face versus self-administered) are not well known and have not been studied extensively. Nevertheless, drawing on an exploratory study done, we could come up with the following 5 hypotheses.

a) The Hierarchy of the Titles is Insensitive to the Mode of Collection

When TGI (BMRB), decided to enter the American market in 1972, they had to compete with SIMMONS (SRMB). During a frontal competition that lasted several years, it has been verified that correlation between the audience for the titles studied by both institutes was equal to 98%, although the LPR data obtained from postal questionnaires exceeded by an average 30% the " through the book " data collected from face-to-face interviews.

Recently, Nielsen launched Home*Scan in the USA. It is a consumer panel in which the housekeeper scans with a hand-held scanner the goods he has just carried back home. In addition, he receives cards holding 145 press logo titles with a bar code. He types his name in the scanner machine and scans the bar code of the titles he reads and the number of issues read among the last four issues. The same operation is made by each member of the family. Here again the data show that audience levels exceed those found by SMRB's face-to-face surveys but also that a strong correlation exists between the audience levels obtained by the two institutes. That is why we expect a strong correlation between the measures of audience obtained in the two collection modes. We also expect that the audience level measured through self-administered questionnaire will be higher than in the case of face-to-face interviews.

b) The Reading Habits Distribution is Sensitive to the Mode of Collection

De Leeuw and Van der Zouwen (1992) compared systematically postal, face-to-face and telephone collection modes. They concluded, after many comparisons, that face-to-face interviews obtain a higher acceptation rate than postal questionnaire. On the other hand, the answers to postal questionnaires are more precise and less sensitive to social prestige biases. Returned postal questionnaires show very few omissions or no response. Lejeune and Bied-Charreton (1992) demonstrated, in a comparative study on bank data, that the postal mode gives more precise estimates. Based on these findings, we expect that the reading habits will differ according to the collection mode. We think that, for prestigious or well known magazines, respondents will inflate the reading habits in face-to-face interviews.

Brown (1990) showed that whatever the screening question formulation may be, some true readers can be wrongly rejected because they do not remember having read the publication. Those " lost " readers are infrequent or secondary readers. Consequently, the absence of screening question in the mail questionnaire should increase the proportion of those infrequent readers. So we expect the reading habit modalities " less often " and " not read during the last 12 months " for weekly as well as monthly publications to be proportionally larger in the self administered Nielsen questionnaire compared to AEPM face-to-face survey. Therefore, both the social desirability bias and the absence of screening question should have the same effects on reading habit distribution.

c) Audience Accumulation is Sensitive to the Mode of Collection

Audience accumulation can be calculated by crossing reading habit with LPR or by fitting a beta binomial distribution to the reading habits. Because we think that distribution of reading frequency varies with the mode of collection, we hypothesize that the reading accumulation rates vary with the mode of collection.

d) Self-Administered Surveys Tend to Underestimate the Audience of Less-Known Titles

The interviewer assures, by the rotation of titles and by instructions he must follow, that all titles not screened out get the same level of respondent attention. On the other hand, we cannot oblige the respondent of a self administered survey to grant the same importance for all titles and to read their logo with the same attention. Thus we think that lesser known titles might be unnoticed by tired respondents in self administered surveys.

e) The Lowest Discrepancies Between the Two Modes of Collection are Expected for Regular Readers

This hypothesis was formulated by Michael Brown in a private communication.

3. Methodology

For testing our hypotheses, we decided to use Nielsen's raw data(questionnaire dated Décember 19994), containing the answers of 6158 panel members (responsible for home shopping). For the AEPM survey (1994), we extracted, among the 15000 respondents, a sub population of the 8 597 primary buyers. Table 3 demonstrates that both populations are similar on the criteria of sex, age, profession, family size and number of children. An alternative for comparing both data would have been to extrapolate both samples to the total French population. However, this would have been unreliable for Nielsen data which is principally composed of women (primary buyers).

Table 3 Comparison Between AEPM and NIELSEN's Sample Structure for Primary Buyer

	AEPM		NIELSEN	
Criteria	Respondents	Percentage	Respondents	Percentage
Sex				
Women	6415	74.6%	5426	88.1%
Men	2182	25.4%	732	11.9%
Age				
15-24 years	566	6.6%	120	1.9%
25-34 years	2002	23.6%	1031	16.7%
35-49 years	2797	32.5%	2571	41.8%
50-64 years	1694	19.7%	1593	25.9%
65 and more	1538	17.9%	842	13.7%
Socio economic group (respondent)				
Farmers	110	1.3%	73	1.2%
Artisans/Shopkeepers	177	2.1%	90	1.5%
Professionals/S. Exec.	807	9.4%	299	4.9%
Middle managers	1378	16%	954	15.5%
Employees	1606	18.7%	1779	28.9%
Blue collar	766	8.9%	372	6%
Retired	1784	20.8%	1012	16.4%
Unemployed	1969	22.9%	1573	25.5%
Socio economic group (family head)				
Farmers	156	1.8%	121	2%
Artisans/Shopkeepers	333	3.9%	311	5.1%
The professions/S. Exc.	1614	18.8%	818	13.3%
Middle managers	1641	19.1%	1080	17.5%
Employees	705	8.2%	1069	17.4%
Blue collar	1628	18.9%	1205	19.6%
Retired	2125	24.7%	1392	22.6%
Unemployed	395	4.6%	162	2.6%
Household size				
1	1682	19.6%	520	8.4%
2	2516	29.3%	1702	27.6%
3	1803	18.6%	1295	21%
4	1670	19.4%	1610	26.1%
5 and more	1126	13.1%	1031	16.7%
Children under 15				
None	5408	62.9%	3836	62.3%
At least one	3189	37.1%	2322	37.7%
Total Primary Buyer	8597	100%	6158	100%

4. Results

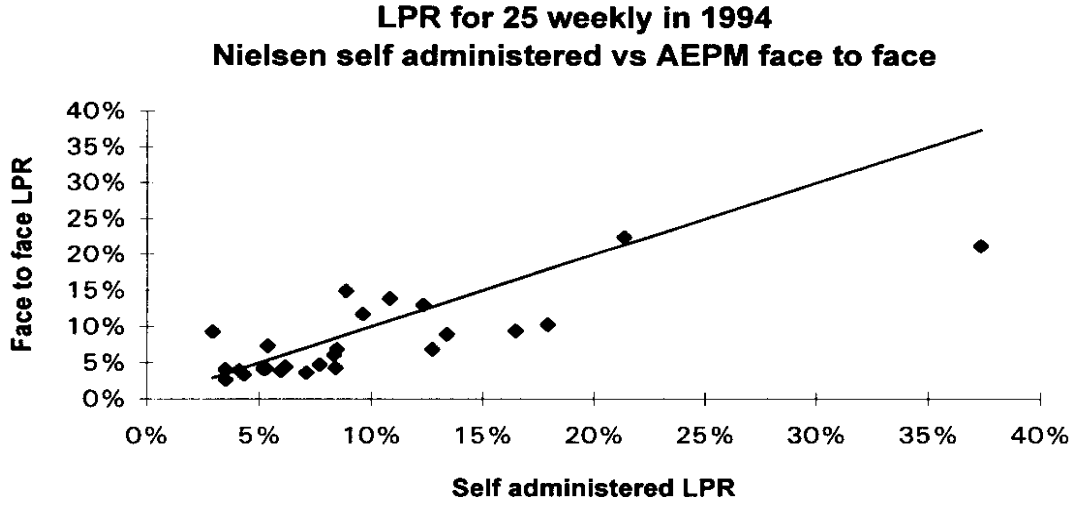
H1 : The hierarchy of the titles is not affected by the mode of collection, but the average reach is higher in self-administered questionnaires

To test our first hypothesis, we use 25 weekly and 43 monthly magazines common to both surveys. We compute audience correlation separately for weekly and monthly publications.

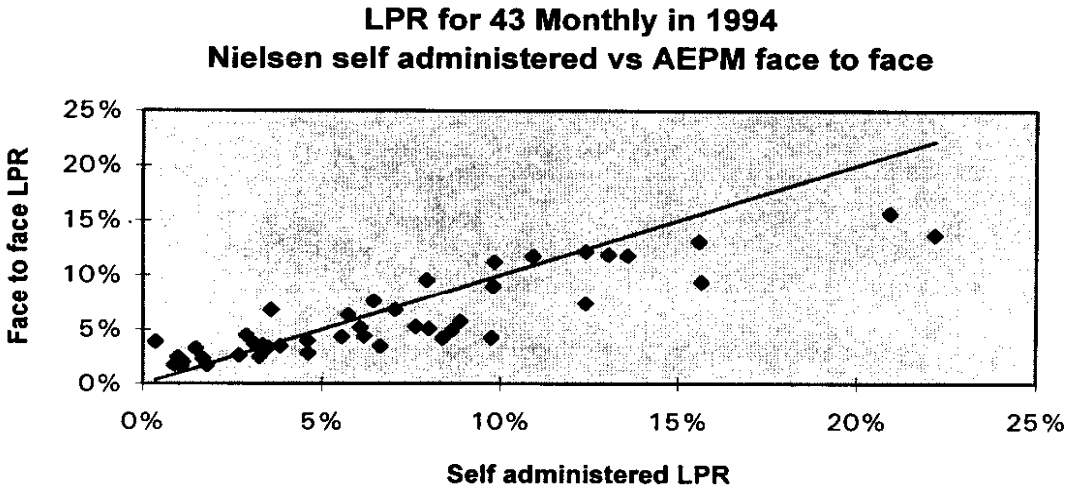
Table 4 - Audience Correlation Across Data Collection Mode

	Audience Correlation	Average Reach %	Standard error for Reach	NIELSEN minus AEPM	t value for Nielsen vs. AEPM	Significance Level
25 weekly	**0.7885**			**1.66%**	0.902	Not
Nielsen		9.89%	0.0744			significant
AEPM		8.24%	0.0541			
24 weekly	**0.7297**			**1.06%**	0.773	Not
Nielsen		8.75%	0.0486			significant
AEPM		7.70%	0.0478			
43 monthly	**0.8926**			**1.09%**	1.1131	Not
Nielsen		7.14%	0.0519			significant
AEPM		6.05%	0.0379			

The correlation between the audience measured in the two surveys are high and significatively different from zero, among the weeklies (r = 0.79) and among the monthlies (r = 0.89). Average reach is higher for the self-administered questionnaire. The average difference is 1.66 audience point for weekly and 1.09 audience point for monthly. However, this difference is not significant at the 5% level. Hypothesis one is thus accepted. However, this does not mean that the LPR given by the two modes of data collection are identical. The next chart shows the scatter in the relation between the two collection mode for weekly.



If the two modes of collection were identical, weeklies would be situated exactly on the 45° line. This is not the case: We see that self-administered LPR is higher than face-to-face LPR for 17 weekly out of 25. The highest discrepancy is 16 audience points, which is clearly disturbing. However this discrepancy can be explained by the fact that this particular magazine had been given freely to Nielsen panelists for some past time. If we exclude this outlying magazine, the second largest discrepancy is only 7.6 audience points and self-administered average reach drops down from 9.89% to 8.75% for Nielsen and from 8.24% to 7.77% for AEPM. Thus, the average difference between the two collection modes is reduced to 1.06 audience point which is almost identical to the 1.09 observed for monthly.



Self-administered LPR is higher than face-to-face LPR for 26 monthly out of 43. The highest discrepancy is 8.5 audience points and there is less scatter around the 45° line than for weekly. Going from face-to-face to self-administered LPR measures would increase the audience by 14% for weekly and by 18% for monthly. These results are very much in line with those found in the comparison between TGI and SRMB, except that the correlation between the two modes are somewhat lower in our study, while the difference in audience is much lower. This might be due to the fact that the two French surveys use the same audience definition (LPR) while the two American surveys use different definitions (LPR vs. through the book) as well as different data collection modes.

H2 : The reading habit distribution is affected by the mode of collection, infrequent reading is higher for self-administered surveys

We think that in front of the interviewer, respondents might have a tendency to inflate their answer "Yes" to the screening question. After all, the purpose of the survey is obvious and they might want to please the interviewer or increase their prestige by answering "Yes, I have read this magazine during the last 12 months". On the other hand, to shorten the interview some respondents might have a tendency to inflate their answer "No" to the screening question.

With the self-administered format there is less time pressure and no social desirability, therefore there should be no reason to screen in a magazine that was not actually read. If this proposition is true, then we should find more respondents with the answer "Not read in the last 12 months" in the self-administered mode than in face-to-face.

To begin with, let us test the hypothesis that the distribution of reading frequency is affected by the mode of collection. We have computed the Chi Square statistic, magazines by magazines. The hypothesis of equality of the distributions is rejected across all types of magazines (see annex 3). This is not surprising since the Chi-square test is biased against the null hypothesis when using large sample sizes. Thus, we have also tested the hypothesis of equality of distribution using the Komolgorof - Smirnof non-parametric test. Again, the equality hypothesis is rejected for all weekly, except "Gala" and "Auto-Plus", for all bi-monthly and for all monthly except "ça m'interesse", "Enfants", "Entrevue", "Famili", "Glamour", "Gd. Reportages" and "Temps retrouvé". However, the fact that the distributions are not identical does not mean that they are necessarily far away.

We have also argued that social desirability could explain these differences. To test this hypothesis, we have ranked magazines by the amount of discrepancy between the two distributions using the coefficient of contingency ($\sqrt{[X^2/n]}$). As expected, the magazines with the largest discrepancies are either well known and/or prestigious. For monthly, the two largest discrepancies are "Marie Claire" and "Vogue". For weekly, the six largest are "Télé Z", "L'Express", "Télé Poche", "Télé Star", "Paris Match" et "Télé 7 Jours". The magazines with the lowest discrepancies have either a lower penetration and/or a lower prestige such as "Famili", "Entrevue", "Temps Retrouvé" for monthly and "Gala", "Nous Deux", "L'Equipe" for weekly. The details of these results are in annex 3.

Let us now study how the two distributions differ. In that purpose, we compare the two distributions, reading habit by reading habit, and count the number of magazines for which the two collection modes give different results at the five percent confidence level.

Table 5 - Comparison of reading habit for the 25 weekly

Number of magazines	AEPM > NIELSEN	No significant difference at 5%	NIELSEN > AEPM
Every week	23	2	0
2 to 3 times a month	19	6	0
Once a month	23	2	0
5 to 6 times a year	19	5	1
Less often	8	8	9
Not read in last 12 months	1	3	21

If we collapse together the first four reading habit modalities and do the same thing for the last two, we see that self-administered questionnaires tend to overestimate the "less often" and "not read" modalities

Table 6 - Comparison of reading frequency for the 2 bi-monthly

Number of magazines	AEPM > NIELSEN	No significant difference at 5%	NIELSEN > AEPM
Every 15 days	0	0	2
Once a month	2	0	0
6 to 10 times a year	2	0	0
3 to 4 times a year	2	0	0
Less often	0	1	1
Not read in last 12 months	0	2	0

Table 7 - Comparison of reading frequency for the 44 monthly

Number of magazines	AEPM > NIELSEN	No significant difference at 5%	NIELSEN > AEPM
Once a month	25	17	2
6 to 10 times a year	33	11	0
3 to 4 times a year	34	10	0
1 to 2 times a year	21	16	7
Less often	2	7	35
Not read in last 12 months	8	6	30

We observe the same pattern for bi-monthly and monthly magazines. Respondents to the self-administered questionnaire use less often the first four reading habits and use more often the last two reading habits than do the respondents in face-to-face interviews. Furthermore, the first four reading habits are the one for which the two mode of collection give, most often, identical results at the 5% level.

This can be seen even more clearly by aggregating the results across the magazines and collapsing the reading habits in two categories as shown in table 8 :

Table 8 - Comparison of reading frequency for all magazines

Reading habit	AEPM > NIELSEN	No significant difference at 5%	NIELSEN > AEPM
Frequent reading	203	69	12
Infrequent or not read	19	27	110
	222	96	132

So far, we have demonstrated that reading habit varies with the mode of collection and that the discrepancies can be explained by the social desirability bias in face-to-face survey and the absence of screening question in self-administered survey. Nevertheless, while significant, the discrepancies remain small. This can be shown by computing the correlation among the two set of reading habits. Independence between the two distributions is rejected for all weekly and monthly magazines.

All correlation's are above 0.98, as can be seen in annex 3. We conclude that while there exist systematic differences along the line hypothesised, these differences are not very large. The files containing the six reading habits for all magazines and for both survey are available from the authors. They could not be included in the paper because of space constraints.

H3 : Audience accumulation is sensitive to the mode of collection

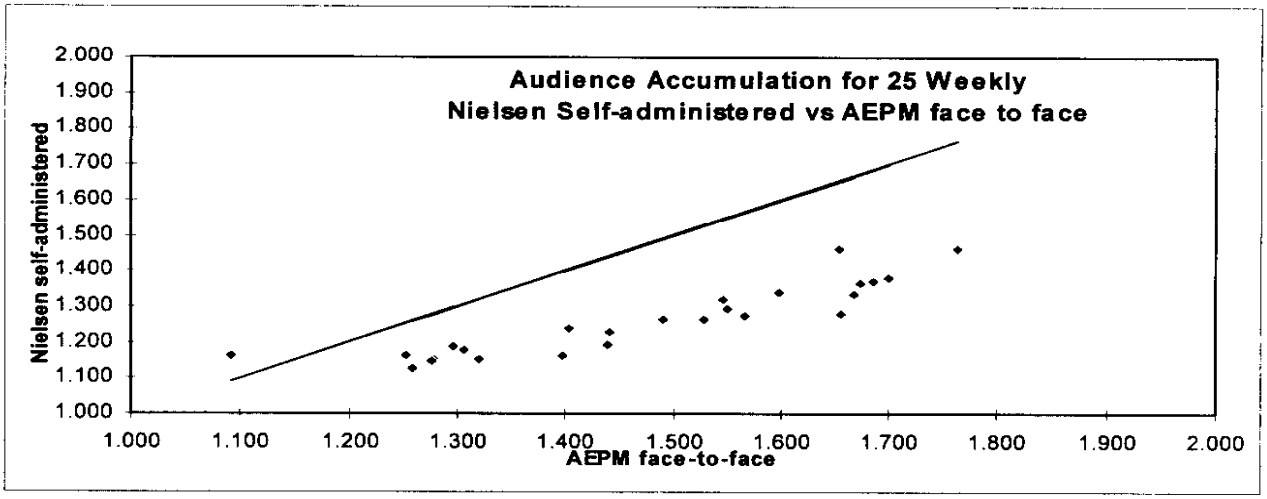
To test this hypothesis, we fit the beta-binomial distribution to the reading frequency data using the method of means and zero. The fitting is constrained so that the estimated beta-binomial reach of each magazine is equal to its LPR reach. First, we estimate the beta-binomial parameters alpha and beta, then we compute the turnover rate.

$$t = R_2/R_1 = 1 + \beta/(\alpha + \beta + 1)$$

For details on the fitting procedure, the reader can consult Chandon (1975, 1979). Audience accumulation is measured by the turnover rate which varies between 1 and 2. We look first at weekly and then at monthly magazine.

For the 25 weekly, audience accumulation is systematically higher for face-to-face (mean turnover = 1.47) than for self-administered (mean turnover = 1.26) surveys. This difference is significant at the 1% level. We can explain this by the fact that face-to-face tend to deflate the "not read" modality (average = 69.5%) and LPR (average = 8.2%) while self-administered inflate the "not read" modality (average = 78%) and LPR (average = 9.9%). In other words, the face-to-face accumulation curve starts lower but ends higher than the self-administered accumulation curve.

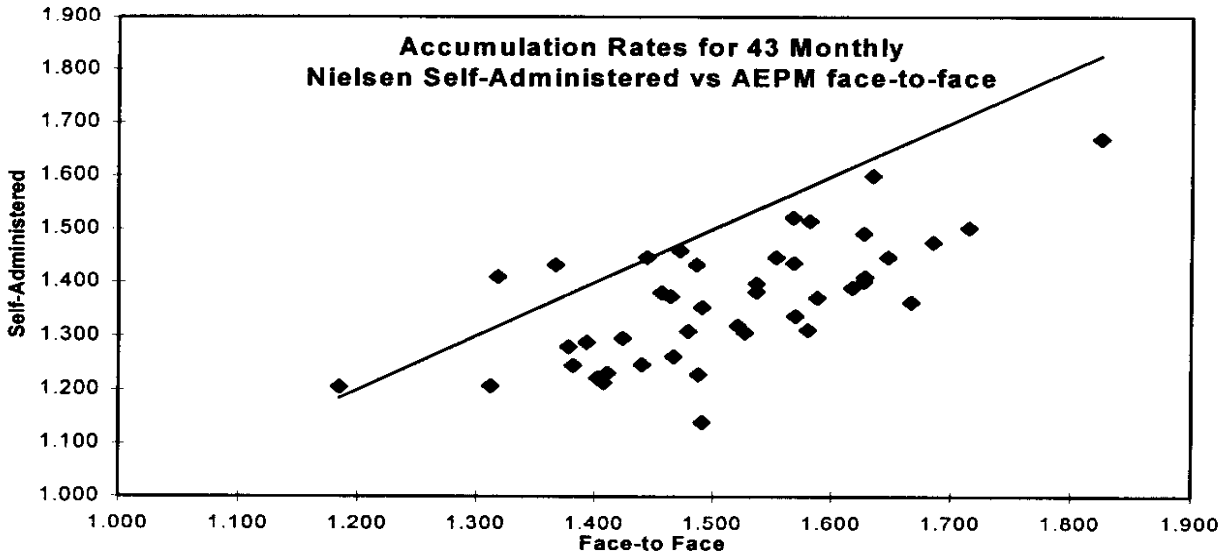
The next chart shows the scatter in the turnover rate for the two collection modes for weekly.



The ranking of the 25 weekly according to audience accumulation rate is not modified by the mode of collection. The correlation between the two turnover rates is high among weekly (r = 0.906).

For the two bi-monthly, audience accumulation is also higher for face-to-face (mean turnover = 1.52) than for self-administered (mean turnover = 1.38) surveys.

Among the 43 monthly, we observe again that audience accumulation is systematically higher for face-to-face (mean turnover = 1.51) than for self-administered (mean = turnover 1.37) surveys. This difference is significant at the 1% level. The ranking of the monthly by the accumulation rate is more sensitive to the mode of collection than the ranking of weekly. The correlation between the two turnover rates is still significant (r = 0.68) but much lower than for weekly. Annex 4 shows the estimates of beta-binomial parameters and the accumulation rates for the two mode of collection and for all types of magazine. The next chart shows the scatter in the turnover rate for the two collection modes among monthly.



We conclude this section by noting that audience accumulation is slower for self-administered than for face-to-face surveys. However, since one-issue audience (LPR) are higher for self-administered surveys, the two accumulated audience curves are likely to be close in the range of 4 to 8 issues for weekly or 2 to 4 issue for monthly. Thus, accumulated audience results are not likely to be greatly different for the two mode of collection, at least for the usual number of insertions found in most media plan.

H4 Self-administered surveys tend to underestimate the audience of less-known titles

The rationale for this hypothesis is that "less-known" titles might be unnoticed in the long list of titles. We already know that, overall, self-administered questionnaires tend to inflate LPR compared to face-to face surveys. Here, we expect that the difference between self-administered and face-to-face LPR's should be lower for "less-known" titles than for "well-known" titles. In other words, the increase due to the usage of self-administered questionnaire should be partially or totally offset by this context effect, for "less-known" titles but not for "well-known" titles. To test this hypothesis, we, somewhat arbitrarily, define "less-known" titles as those with a face-to-face LPR audience below 5%.

Table 9 Effect of Collection Mode for "Less-known" vs. "Well-known" Titles for 24 Weekly

LPR average audience	Number of magazines	Face-to-face	Self-administered	Differences
"Less-known"	11	3.96%	5.57%	**1.61%**
"Well-known"	13	10.85%	11.44%	**0.59%**

Table 9 shows that hypothesis 4 is not verified for the 24 weekly (the outlying magazine is excluded from the analysis). Contrary to our expectations, respondents do not miss or under-report "less-known" titles in self-administered surveys. The trend toward higher LPR in self-administered surveys is even higher for "less-known" titles (1.61 more audience points) that for "well-known" titles (0.59 more audience points). This difference among the two types of magazine is significant at the 2% level.

Table 10 - Effect of Collection Mode for "Less-known" vs. "Well-known" Titles for 43 Monthly

LPR average audience	Number of magazines	Face-to-face AEPM	Self-administered NIELSEN	Differences
"Less-known"	23	3.26%	3.89%	**0.63%**
"Well-known"	20	9.27%	10.88%	**1.62%**

"Less-known" monthly have self-administered audiences close to face-to-face audiences while "well-known" monthly have self-administered audiences higher than face-to-face. However, this difference among the two types of magazine is not significant at the 5% level.

We conclude this section by noting that the absence of title rotation and interviewer probing does not appear to be detrimental to "less-known" titles in self-administered questionnaires.

H5 The lowest discrepancies between the two modes of collection are expected for regular readers

The rationale here is that respondents will be less hesitant and therefore less sensitive to the mode of collection, when asked about titles they read regularly. To test this hypothesis, we define regular readers as those who declare reading a weekly every week or a monthly every month. We use factorial analysis of variance to explain the percentage of respondents in each reading habit modality for the two questionnaires. We have two main effects: Reading habit and mode of collection and we look for a significant interaction between these two factors.

Table 11 Analysis of Variance

Source of Variation	Sum of Squares	DF	Mean Square	F test	Sig. of F
Main Effects	19.651	6	3.275	798.738	.000
Reading habit	19.651	5	3.930	958.485	.000
Collection mode	.000	1	.000	.000	1.00
Interaction					
Reading hab.*Collect.	.116	5	.023	5.636	.000
Explained	19.766	11	1.797	438.237	.000
Residual	1.181	288	.004		
Total	20.947	299	.070		

As expected, the effect of reading habit is highly significant while the effect of collection mode is not. To test our hypothesis, we now turn to the interaction effect and find that it is significant (F=5.6). To see which are the modalities which exhibit the most differences, we look at the cross table of the six reading habits by the mode of collection. Table 12 shows that the reading habit modality with the highest average discrepancy is "not read in the past 12 months" and not "every week" as hypothesized. Among the readers, the reading habit that is less sensitive to the mode of collection is "less often". Thus the hypothesis of Michael Brown is not verified for weekly magazines.

Table 12 Average Frequency of reading by Collection mode for 25 Weekly

Reading habit	Face-to-face	Self-administered	Difference
Every week	6.17%	4.01%	2.16%
2 to 3 times a month	3.22%	1.67%	1.55%
Once a month	5.09%	2.39%	2.70%
5 to 6 times a year	7.46%	4.96%	2.50%
Less often	8.57%	9.01%	-0.44%
Not read in last 12 months	69.49%	77.96%	-8.47%

We examine now the 43 monthly to see if they follows the same pattern than weekly.

Table 13 Analysis of Variance

Source of Variation	Sum of Squares	DF	Mean Square	F test	Sig. of F
Main Effects	47.824	6	7.971	3994.959	.000
Reading habit	47.824	5	9.565	4793.948	.000
Collection mode	.000	1	.000	.012	.915
Interaction					
Reading hab.*Collect.	.051	5	.010	5.129	.000
Explained	47.875	11	4.352	2181.400	.000
Residual	1.053	528	.002		
Total	48.929	539	.091		

We find again a significant interaction between reading habit and collection mode (F=5.1). Table 14 shows that the reading habit modality with the highest average discrepancy is "less often". The reading habit modalities that are less sensitive to the mode of collection are " 1 to 2 times a year" followed closely by "once a month". Thus the hypothesis of Michael Brown is partially verified for the monthly magazines.

Table 14 Average Frequency of reading by Collection mode for 43 Monthly

Reading habit	Face-to-face	Self-administered	Difference
Once a month	4.62%	3.81%	0.81%
6 to 10 times a year	4.51%	2.47%	2.04%
3 to 4 times a year	6.56%	4.19%	2.37%
1 to 2 times a year	5.70%	5.26%	0.44%
Less often	3.69%	6.72%	-3.03%
Not read in last 12 months	83.04%	85.66%	-2.62%

We conclude this section by observing that the lowest discrepancies between the two modes of collection do not necessarily occur for regular readers.

CONCLUSION

In this article, we investigated 5 hypotheses pertaining to the effects of two collection modes, self-administered and face-to-face surveys, on print audience measurement. First, this study provides support for the hypothesis that Last Period Reading is higher in self-administered surveys but show also that this difference does not impact much the ranking of the titles. Second, we found that reading habit distribution is influenced by the mode of collection: Respondents in self-administered questionnaire use less often the four highest modalities and use more often the two lowest modalities. Next, we found that these discrepancies can be explained by the social desirability bias in face-to-face survey and by the absence of screening question in self-administered survey. Nevertheless, we found like in hypothesis 1 that, while significant, these discrepancies remain small. Third, we found likewise that audience accumulation is influenced by the mode of collection: Accumulation rates are lower in self-administered surveys. However, since one-issue audience (LPR) are higher for self-administered surveys, accumulated audience results are not likely to be greatly different for the two mode of collection, at least for the usual number of insertions found in most media plan. Hypothesis 4 investigated the potential detrimental effects of self-administered surveys on "less-known" titles. Contrary to this hypothesis, we found that the absence of title rotation and of interviewer probing increased the audience of "less-known" titles in self-administered questionnaires in comparison to face-to-face surveys. Last, hypothesis 5 expected lower discrepancies between the two modes of collection for regular readers. An ANOVA found again that collection mode has no significant effect but that an interaction between reading habit results and collection mode is significant. However, the lowest discrepancies between the two modes of collection do not necessarily occur for regular readers.

Overall, it appears that, for print audience measurement, self-administered surveys mailed to panel members are a reliable alternative to traditional face-to-face surveys. They have excellent return rates, lower costs and the can be eventually combined with purchase data to develop behavior-based media planning.

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Annex 1 - Main Print Media Surveys in Europe

Country	Name & Institute	Collection mode & Duration time	Media & # titles	Sample size	Calendar # days interv.
Germany	AWA, IFD Allensbach	Face-to-face 120 mn	Print =305 Tv,Radio,cine, outdoor	20000	3 sweeps 170 days
Belgium	CIM MP Sobemap	Face-to-face 75 mn	Print = 150 Radio,TV,cine	10000	Continuous 360 days
Denmark	DRB index Gallup	Face-to-face (30') Telephone (10') Mail self-adm	Print =410 Tv,Radio,cine, outdoor, free mag. and local news	13000 50000	Continuous 360 days
Spain	EGM Eco consulting	Face-to-face (50') Mail Self-adm	Print = 171 TV, radio, cinema	40000	3 sweeps 168 days
France	AEPM Ipsos, ISL, Sofres	Face-to-face 45 mn	Print = 133 TV, radio, cinema Newspapers	15000	Continuous 360 days
	PQRN Ipsos	Telephone 15 mn	News = 96	21000	2 sweeps 180 days
	Nielsen	Mail Self-adm.	Print = 70	9000	2 sweeps
United Kingdom	NRS RSL	Face-to-face 35 mn	Print = 246 TV, radio, cinema	37500	Continuous 360 days
Italy	Audipress Demoskopea Doxa, Makrotest	Face-to-face 35 mn	Print = 169	36000	2 sweeps 168 days
Norway	FM Norsk Gallup	Telephone (18') Mail Self-adm.	Print = 150 Tv,radio,cinema, mailings	29000	Continuous 300 days
Netherlands	SUMMO Inter/View	Telephone (25') Mail Self-adm.	Print = 113 Tv,radio,Cinema, outdoor, y. pages	32000	Continuous 310 days
Sweden	OCRS IMU-Testologen	Mail Self-adm	Print = 325 Tv,radio,cinema, outdoors, mailing	20000	10 sweeps 300 days
Switzerland	Mach Basic WEMF/ REMP	Telephone (25') Mail self-adm	Print = 321 Cinema	20000	Continuous 290 days

Source: ESOMAR 1994 Report on newspaper and magazine readership measurement in Europe updated in June 95.

Annex 2 Main Panels complemented with Media data in Europe

Country	Institute	Panel	Purchase Collection Mode	Media covered & Collection Mode
France	Nielsen	Scan 9000	scanner at the counter	TV/Radio/Print Self-administered
France	Secodip	Consoscan	home scanning	TV/Radio/Print Self-administered
Norway	Gallup	Consumer & Media	Self-administered	TV/Radio/Print/Cinema Telephone.
Sweden	IMU-Testologen/TGI	OVERSTO Konsument	Self-administered	TV/Radio/Print Self-administered

Annex 3 Comparison of reading habits for 25 weekly , 2 Bi-monthly and 43 monthly

25 Weekly	Chi Square	Phi	Correlation
Auto plus	117	0.09	0.998
Elle	338	0.15	0.990
L'Equipe	64	0.07	1.000
L'Evénement du Jeudi	374	0.16	0.998
L'Express	559	0.19	0.995
Femme Actuelle	70	0.07	0.975
Gala	35	0.05	1.000
Maxi	87	0.08	0.997
Nous Deux	53	0.06	1.000
Le Nouvel Observateur	391	0.16	0.998
Paris Match	492	0.18	0.976
Pélerin Magazine	108	0.09	1.000
Le Point	427	0.17	0.998
Point de Vue	222	0.12	0.999
Télé 7 Jours	479	0.18	0.990
Télé K7	120	0.09	1.000
Télé Loisirs	295	0.14	0.999
Télé Poche	540	0.19	0.999
Télé Star	513	0.19	0.998
Télé Z	685	0.22	0.996
Télérama	294	0.14	1.000
TV Hebdo	395	0.16	0.997
La Vie	122	0.09	1.000
Voici	108	0.09	0.999
VSD	459	0.18	0.996

2 Bi-Monthly	Chi Square	Phi	Correlation
L'Auto-journal	84	0.075	0.999
L'Expansion	194	0.115	1.000

Annex 3 (end) Comparison of reading habits for 25 weekly , 2 Bi-monthly and 43 monthly

43 Monthly	Chi Square	Phi	Correlation
20 Ans	116	0.089	1.000
30 Millions d'Amis	256	0.132	0.998
Action Auto-Moto	378	0.160	1.000
Actuel	302	0.143	0.999
Automobile Magazine	123	0.091	1.000
Avantages	122	0.091	0.999
Biba	129	0.094	0.999
Ca M'intéresse	334	0.150	0.994
Capital	90	0.078	0.999
Chasseur Français	232	0.125	0.999
Cosmopolitan	202	0.117	1.000
Cuisine Actuelle	275	0.137	0.995
Enfants Magazine	282	0.138	0.998
Entrevue	54	0.061	1.000
Famili	53	0.060	1.000
Famille Magazine	79	0.073	1.000
Géo	399	0.164	0.987
Glamour	88	0.077	1.000
Grands Reportages	261	0.133	0.998
Guide Cuisine	243	0.128	0.998
Lire	176	0.109	1.000
Maison et Jardin	464	0.177	0.992
Marie Claire	653	0.210	0.993
Marie Claire Maison	224	0.123	0.997
Modes et Travaux	298	0.142	0.987
Mon Jardin - Ma Maison	434	0.172	0.996
Notre Temps	139	0.097	0.998
Parents	461	0.177	0.995
Première	162	0.105	0.999
Prima	104	0.084	0.997
Réponse à Tout	169	0.107	0.999
Reponse à Tout Santé	352	0.154	0.996
Santé Magazine	452	0.175	0.990
Sciences et Avenir	186	0.112	0.999
Science et Vie	466	0.178	0.997
Sélection du Reader's Digest	502	0.184	0.999
Studio	189	0.113	1.000
Terre Sauvage	214	0.121	0.999
Top Santé	290	0.140	0.994
Temps Retrouvé	68	0.068	1.000
Vidéo 7	200	0.116	1.000
Vogue	618	0.205	0.999
Votre Beauté	133	0.095	1.000

Annex 4 Audience Accumulation

25 Weekly

Beta-Binomial parameter	AEPM Alpha	AEPM Beta	AEPM Turnover	NIELSEN Alpha	NIELSEN Beta	NIELSEN Turnover
Auto plus	0.0477	1.2665	1.547	0.0369	0.4826	1.318
Elle	0.1799	2.4394	1.674	0.0909	0.6219	1.363
L'Equipe	0.0310	0.6961	1.403	0.0179	0.3204	1.239
L'Evénement du Jeudi	0.0847	2.0498	1.654	0.0384	0.8956	1.463
L'Express	0.1505	2.3079	1.667	0.0482	0.5289	1.335
Femme Actuelle	0.2166	0.8047	1.398	0.1314	0.2205	1.163
Gala	0.0526	1.1792	1.528	0.0338	0.3683	1.263
Maxi	0.0896	0.8635	1.442	0.0620	0.3135	1.228
Nous Deux	0.0406	0.8127	1.439	0.0202	0.2424	1.192
Le Nouvel Observateur	0.1233	1.6720	1.598	0.0506	0.5458	1.342
Paris Match	0.2786	2.4311	1.655	0.0918	0.4199	1.278
Pélerin	0.0558	1.3776	1.566	0.0246	0.3888	1.275
Le Point	0.1061	2.4263	1.687	0.0329	0.6030	1.369
Point de Vue	0.0680	2.4871	1.700	0.0231	0.6347	1.383
Télé 7 Jours	0.1128	0.3897	1.259	0.0410	0.1508	1.127
Télé K7	0.0191	0.4497	1.306	0.0079	0.2165	1.177
Télé Loisirs	0.0609	0.4087	1.278	0.0257	0.1828	1.151
Télé Poche	0.0667	0.5007	1.319	0.0197	0.1852	1.154
Télé Star	0.0657	0.4075	1.277	0.0216	0.1776	1.148
Télé Z	0.0628	0.3583	1.252	0.0192	0.1974	1.162
Télérama	0.0348	0.4374	1.297	0.0132	0.2325	1.187
TV Hebdo	0.0104	0.1018	1.092	0.0060	0.1984	1.165
La Vie	0.0454	1.2851	1.551	0.0193	0.4284	1.296
Voici	0.1043	1.0635	1.491	0.0592	0.3823	1.265
VSD	0.1796	3.8198	1.764	0.0605	0.9195	1.464
Average	0.0915	1.2814	1.4738	0.0398	0.3943	1.2602

2 Bi-Monthly

Beta-Binomial parameter	AEPM Alpha	AEPM Beta	AEPM Turnover	NIELSEN Alpha	NIELSEN Beta	NIELSEN Turnover
L'Auto-journal	0.0360	0.9935	1.490	0.0284	0.6330	1.381
L'Expansion	0.0357	1.2908	1.555	0.0166	0.6339	1.384
Average	0.0359	1.1421	1.5222	0.0225	0.6335	1.3826

Annex 4 Audience Accumulation

43 Monthly

	AEPM			NIELSEN		
Monthly	Alpha	Beta	Turnover	Alpha	Beta	Turnover
20 Ans	0.0462	2.6226	1.715	0.0188	1.0299	1.503
30 Millions d'Amis	0.0658	1.1853	1.527	0.0377	0.4566	1.306
Action Auto-Moto	0.0495	0.6800	1.393	0.0152	0.4102	1.288
Actuel	0.0646	1.3942	1.567	0.0336	1.1275	1.522
Automobile Magazine	0.0330	0.8933	1.464	0.0210	0.6096	1.374
Avantages	0.0589	0.7380	1.411	0.0443	0.3129	1.231
Biba	0.0823	1.8188	1.627	0.0411	0.6995	1.402
Ca M'intéresse	0.1492	1.5089	1.568	0.0921	0.8468	1.437
Capital	0.0347	0.7604	1.424	0.0284	0.4313	1.295
Chasseur Français	0.0562	0.8296	1.440	0.0203	0.3346	1.247
Cosmopolitan	0.0748	1.9700	1.647	0.0266	0.8329	1.448
Cuisine Actuelle	0.0749	0.7235	1.402	0.0559	0.3015	1.222
Enfants Magazine	0.0481	0.8793	1.456	0.0414	0.6408	1.381
Entrevue	0.0106	0.5851	1.367	0.0068	0.7692	1.433
Famili	0.0224	0.6206	1.378	0.0157	0.3940	1.279
Famille Magazine	0.0261	0.8977	1.467	0.0174	0.3606	1.262
Géo	0.1954	1.2976	1.520	0.0950	0.5142	1.320
Glamour	0.0300	1.7854	1.634	0.0165	1.5267	1.600
Grands Reportages	0.0521	1.4505	1.580	0.0331	0.4669	1.311
Guide Cuisine	0.0342	0.6384	1.382	0.0290	0.3341	1.245
Lire	0.0339	1.4342	1.581	0.0184	1.0813	1.515
Maison et Jardin	0.1062	2.4036	1.685	0.1078	1.0068	1.476
Marie Claire	0.2123	1.6007	1.569	0.0667	0.5434	1.337
Marie Claire Maison	0.1150	2.2281	1.666	0.0570	0.6030	1.363
Modes et Travaux	0.1769	1.1198	1.488	0.0920	0.3229	1.228
Mon Jardin-Ma Maison	0.0570	1.3066	1.553	0.0799	0.8733	1.447
Notre Temps	0.0654	0.4834	1.312	0.0408	0.2720	1.207
Parents	0.1708	1.3543	1.536	0.0724	0.6637	1.382
Première	0.0516	1.4985	1.588	0.0218	0.6038	1.371
Prima	0.1458	0.7881	1.408	0.0772	0.2917	1.213
Réponse à Tout	0.0929	1.2636	1.536	0.0527	0.6950	1.398
Réponse Santé	0.0510	0.8394	1.444	0.0856	0.8784	1.447
Santé Magazine	0.1540	1.1103	1.490	0.0838	0.5920	1.353
Sciences et Avenir	0.0372	0.9269	1.472	0.0327	0.8761	1.459
Science et Vie	0.0400	0.4850	1.318	0.0504	0.7309	1.410
Selection du Reader's Digest	0.1134	1.0728	1.491	0.0142	0.1643	1.139
Studio Magazine	0.0356	1.7378	1.627	0.0111	0.9795	1.492
Temps Retrouvé	0.0062	0.2277	1.185	0.0072	0.2604	1.205
Terre Sauvage	0.0707	1.7236	1.617	0.0317	0.6592	1.390
Top Santé	0.1403	1.0477	1.479	0.0754	0.4801	1.309
Vidéo 7	0.0242	0.9669	1.486	0.0075	0.7698	1.433
Vogue	0.1889	5.6048	1.825	0.0314	2.0905	1.670
Votre Beauté	0.0452	1.7613	1.628	0.0239	0.7123	1.410
Mean	0.0778	1.3085	1.5104	0.0426	0.6640	1.3666

T test for average accumulation weekly Probability	0.000075	Correlation among weekly	0.906
T test for average accumulation monthly Probability	0.000002	Correlation among monthly	0.677