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READING AND REREADING
OF PRESS

INTRODUCTION

To measure the audience of press is not an easy task. It requires to determine properly:

- the number of readers
- the number of rereadings per reader.

The press audience survey conducted in France by the CESP, main polling institute for TV, radio and press audience measurement, is based on a sample of 15.000 people. It provides:

- a filter question (read in the last year)
- the Last Reading Period (LDP)
- reading habits
- purchase method (subscription, personnal purchase etc...).

Concurrently the OJD provides the average circulation of each titles in France.

We will demonstrate that circulation, last reading period and purchase method, make it possible to accurately determine the number of readers and rereadings.
The method used consists of dividing the readings measured by the CESP into readers and rereadings. First, I should point out that the following results form a part of the research conducted by the Idemedia group over the past five years. The principle of the method consists in achieving consistency between all the different data sources.
For the press, the objective will be consistency between the OJD circulation data and the audience figures given by CESP.

We will successively examine the following issues :

- the audience correcting principle (1)
- the rereading calculation principle
- example of results.
- a comparaison with the F.R.Y. method (TV magazines)

(1) The present paper is originated from Jean-Michel AGOSTINI's researches. IREP 1975 Seminar.

I – AUDIENCE CORRECTING

1.1 – Reading of the household

First, we look for consistency between two different data sources : OJD and CESP

OJD which provides the circulation figures in France, enables us to know the number of copies sold per week for a weekly, per month for a monthly etc ... Concurrently CESP measures the number of buyers / readers for the last period because it considers the readers of a weekly for the last seven days, who claimed to have bought it, or to be subscribers.

The two results should normally match, because the number of sold copies has to be equal of the number of bought copies and vice versa.

Actually, the distorsion between the two results is relatively large, as shown by the following example.

TABLE 1

EXAMPLE

A. TV weekly TELEPOCHE

OJD France	1.719.000	
Readers/buyers	3.137.007	+72,1%
Household others members	2.261.100	
	--->	1,7 pers/household

B. Women monthly

OJD France	1.310.000	
Readers/buyers	2.747.410	+109,7%
Household others members	1.549.110	
	--->	1,6 pers/household

For the TV weekly TELEPOCHE : number of readers/buyers 3.137.007 i.e +72,1% between would-be buying copies and sold copies. For the women monthly : number of readers/buyers 2.747.000 i.e + 109,7%.

Our process consists in making clear the distortion and understanding the origin of the bias. Actually, we can see two kinds of bias:

- an incorrect buying claim by the interviewee
- increase of Last Reading Period because of a wrong appreciation of time and because of integration of rereadings.

First Bias

When we examine the CESP results, we note that for the TV weekly 3.140.000 people claim to have bought it and 2.260.000 people claim that another household member has bought it.

We should normally obtain the household composition; but the result is only 1,7 people per household which is too low. Actually, the readers of TELEPOCHE live in households comprising of 2,5 people (Last Reading Period composition). These distortions are similar for all titles. Obviously, the origin of the first bias is an incorrect buying claim by the interviewee.

It is a standard bias which has been already observed in other surveys ; we found that, in a couple the sum of the female and male influences in buying action gives 150% instead of 100%. This phenomenon is more relevant in the case of press.
Supposing my son buys the TV weekly each week, then he proposes to me to subscribe. I agree, I pay and I register the subscription under my wife's name. Who is the subscriber ?

Each of us claims to be the subscriber. This question being ambiguous, a simplyfying assumption is necessary :
Only one copy per household can be bought. Therefore, we do not consider the number of declared buyers but the number of households where there is at least one buyer. It requires dividing the population into three parts identifying each time one household member having the feature to be unique, either the head of household male or female or the housewife, plus the one head-household-man or the young people, considering men who are not head of household and women who are not housewifes with a special weighting in order to consider the number of people per household.

For each title, we keep the highest of the three figures which is also the nearest of the demographics caracteristics of its family of press. Then we obtain the concept of primary household reader (FLP).

With the two previous examples, we see that a part of the distortion is explained. For the TV weekly head of households male or female, gives 2.464.000 primary household readers for an OJD circulation in France of 1.719.000 so the distortion is 43% instead of 72%. For the women's monthly, the decrease is lower ; This is logical the assigning error is lower too. The housewife has higher probability of being the buyer, the man rarely claiming to be the buyer.

TABLE 2

EXAMPLE

A. TV weekly TELEPOCHE

Head of household M	2.033.000
Head of household F	431.000
FLP (household primary reader)	2.464.000
OJD France	1.719.000

$\left.\right\}$ + 43,3%

B. Women monthly

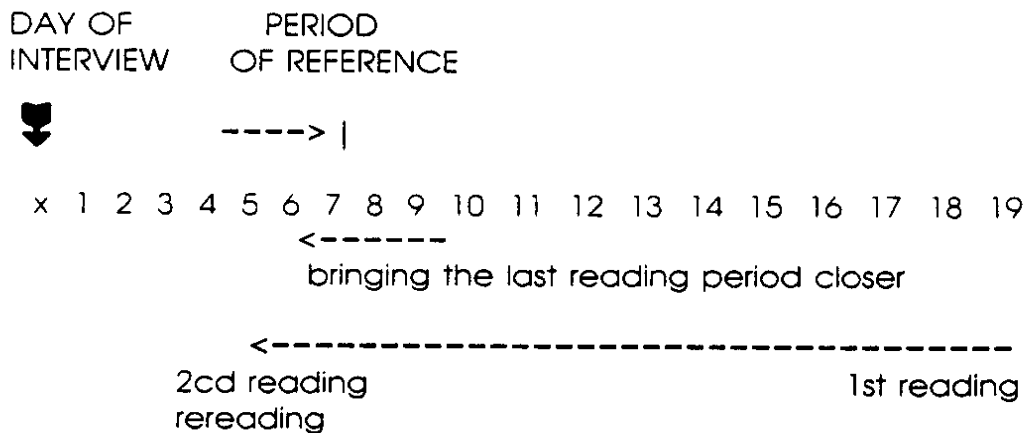|	
Housewife	2.597.000
Men alone	19.000
FLP	2.616.000
OJD France	1.310.000

$\left.\right\}$ + 100%

Second bias

We still obtain a residue. In order to explain the origin of this second bias, we have to analyse different magazines according to their frequency of issue: the bigger it is the higher the distortion. There are two explanations. Suppose I interview on day x, about a weekly for the last seven days; the first bias for all magazines, is that people tend to bring the last reading period closer; if the interviewee has read the weekly eight or nine days ago, we know from experience that he will bring the date to seven or eight days. Consequently, we have interviewees who read, out of the period, but declare themselves as buyers/readers in the given period. But this phenomenon does not explain the important differences we can observe between magazines having the same frequency of issue.
This second phenomenon is a specific characteristic of periodical press magazine: the rereading (table 3). Actually it is possible to answer properly to the CESP questionnaire, but we will intentionally misinterpret it.

TABLE 3

SECOND BIAS

daily average deviation	106
weekly average deviation	122
montly average deviation	150

➡️ increasing with frequency of issue

DAY OF   PERIOD
INTERVIEW   OF REFERENCE

▼   ----> |

x 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
                    <------
                    bringing the last reading period closer

            <-------------------------------------
            2cd reading   1st reading
   rereading

---

For example, when I interview about a weekly in order to know if it has been purchased and read during the last seven days, the answer is positive. It is truthfull; it has been purchased fifteen days ago, the person began to read it, then reread it. The interviewee answering positively during the last period of issue, will be considered as a last period buyer, even though, he did not purchase it at that period of time, but had just reread it.

It is necessary to consider that the period is inflated by a coefficient which adds in the period of reference readers who are not related to this period. It is the reason why we use the corrected probabilities method.

TABLE 4

Conclusion
It is necessary to consider that the period of reference is inflated and must be corrected by a coefficient d.

period of reference	inflation d
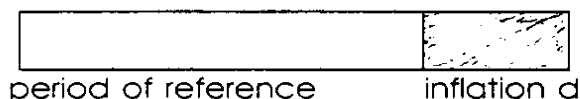
■▸ correction of last period probabilities

$$1-Q_i=(1-P_i)^{d_i}$$

Pi : Gross probability
Qi : Corrected probability
d : coefficient of inflation
SUM qix . Wi : corrected audience
W: interview weight

But this correction is not relevant for all readers. Actually, we identified two types of readers : The primary and the secondary readers who read at home, can reread a title and must be related to the OJD circulation figures. The tertiary readers who read outside, do not have the opportunity of rereading a title and cannot be related to the circulation.

1.2. Tertiary readings

We are now going to show how we carried out the tertiary reading corrections, eliminating the bias of period inflation . If we suppose that there is no rereading for tertiary readers, the CESP reading audiences should logically lead to the number of readers. Since the survey is expanded on a long period, and the results are averaged, each day should provide an equal number of readers. Consequently, there should not be more readers the seventh day than the first one for a weekly, and more readers the thirtieth day than the first one for a monthly.

Let us see the example of two monthly magazines which have different characteristics; we have isolated all the last reading periods: only 30 days for the tertiary readers (table 5).

Considering the monthly A, the first seven days add up to 403.900 readers. We count 531.000 readers during the following 8-15 days and 809.180 during the following 16-30 days. The second column provides the number of readers per an average day: we obtain 57.600 during the first seven days, 66.380 during the following 8-15 days and 53.940 during the 15-30-following days.
Logically, we could not have more than 57630 readers per day i.e. a total of 1.728.900 for 30 days. The CESP is extremely consistent since it totalises 1.743.580 readers which means 99.2%.

On the contrary, the phenomenon is different for the monthly B. People have brought their reading much too close. The reading per day is of about 36 940 during the first period, 61 630 during the second one, and 49 430 during the third one; it declines when we are out of the period of reference. The potential audience is 36.940 x 30 days = 1.108.200 instead of 1.431.480. Since it is impossible to have more than 1.100.000, we can limit the title at this level of audience.

TABLE 5

EXAMPLE OF LIMITING TERTIARY AUDIENCES

READINGS AT	MONTHLY A III	READERS DAY	MONTHLY B III	READERS DAY
1-7 days	403.900	57.630	258.590	36.940
8-15 days	531.000	66.380	431.410	61.630
16-30 days	809.180	53.940	741.480	49.430
31-91 days	1.340.660	21.980	876.370	14.370
91-182 days	820.000	9.010	482.340	5.300
183-365 days	709.430	3.880	296.130	1.630
POTENTIAL	57.630 x 30 days = 1.728.900		36.940 x 30 days = 1.108.200	
MEASURED	1.743.580		1.431.480	
LIMITED AT	99,2 %		77,4 %	

We have just looked into the way to convert readings into readers, considering the OJD circulation for the primary and the secondery readers, and considering the first item of the last period for the tertiary readers. Assuming there is no rereadings for tertiary readers, let us see, how to calculate the rereading for the first group.

2- rereading calculation

Generally we only use one figure in the CESP survey, namely the number of last period readers, who have read during the last seven days. Actually we could use some more figures.

In the CESP questionnaire the last period reading is based with 6 items

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WEEKLY	MONTHLY
yersterday/before yersterday	< 8 days
3 - 4 days	8 - 15 days
< 8 days	15 - 30 days
8 - 15 days	1 - 3 month
15 - 30 days	3 - 6 month
> 3 days	> 6 month

Plus the filter question measuring the reading during one year.

These six data points enable us to draw the curve of audience accumulation. This curve is established by a relatively simple method (table 6)
Three unknowns allow us to make the adjustment with only six data points. And by using logarithms and changing a variable we will obtain a straight line, thus a linear adjustment.
This curve and this adjustment enable us to extrapolate the Reading to yersterday; to obtain this result it is not necessary to change the CESP questionnaire since an adjustment based on the six data points constitutes a mean more reliable than any question asked abruptly.

TABLE 6

EXTRAPOLATION OF THE CURVE OF AUDIENCE
ACCUMULATION TO YERSTERDAY

$$Lj = \frac{MJ^k}{B + J^k}$$

$$Log \left(\frac{M}{Lj} - 1\right) = Log\ B - K\ Log\ J$$

$$Y = a + bx$$

The extrapolation on the Reading Yersterday gives us, according to the questionnaire and the sampling, the reading per average day multiplied by the number of days in the period. Thus we obtain the number of readings related to the period of issue. Allowing for the restrictive assumption of an unique rereading per day, which is not realistic, we obtain a lower value of the rereading; The number of rereadings can be calculated by dividing the number of readings reached with this method, by the number of readers previously corrected..

For example (table 7) for the weekly TV TELEPOCHE, we have differents items (1, 2, 4, 7, 15, 30, 365 days); In the first column, readers figures Lj given by the CESP; figures in the next column resulted from the previous adjustment.

This adjustment works in a way that we consider as "acceptable". We can then extrapolate the Reading Yerterday which gives 3.033.111 readers per day. If we multiply by 7 days we get 21.231.777 readings. The average audience, previouly calculated, being of 5.897.570 we find 3,6 rereadings. These results are consistent with those resulting from the time budget panel conducted by the CESP in 1979.

TABLE 7

EXAMPLE
WEEKLY TV
TELEPOCHE

J	Lj	L ajusted
1		3.033.111
2	4.658.126	4.629.954
4	5.718.076	5.908.570
7	7.023.220	6.962.523
15	8.214.907	8.312.404
30	9.293.238	9.366.355
365	12.058.290	11.523.504

$L_1 = 3.033.111$

$L_7 = 7 L_1 = 21.231.777$

audience corrected $= 5.897.570$

$$\text{rereaging/day} = \frac{\text{readings}}{\text{readers}} = \frac{21.231.777}{5.897.570} = 3,60$$

The adjustment works just as well in a second example based this time on a monthly (table 8) the verification is also valid for the 125 other titles analysed by the CESP. The Reading Yersterday extrapolation gives 288.000 readings, and 8.640.000 readings on 30 days for an corrected audience of 4.473.310. The 30 days CESP Lj is only of 7.232.000.

In fact this magazine has less readers than counted by CESP (4.500.000 instead of 7.200.000) but on the other hand, the number of contacts delivered is greater (8.600.000 instead of 7.200.000). The rereading per day is 1,93.

TABLE 8

EXAMPLE
MONTHLY B

J	Lj	L ajusted
1		288.000
7	2.147.190	2.202.030
15	4.261.700	4.283.760
30	7.232.400	6.891.480
91	10.702.450	10.918.250
182	12.555.300	12.518.940
365	14.023.700	13.426.450

$L_1 = 288.000$

$L_{30} = 30\ L_1 = 8.640.000$

audience corrected $= 4.473.310$

$$\text{rereaging/day} = \frac{\text{readings}}{\text{readers}} = \frac{8.640.000}{4.473.310} = 1,93$$

This approach shows the great coherence of CESP results since the adjustments work perfectly and the rereadings corroborate the results obtained from an other source.

The CESP gives, in fact a lot of results of which only a small part is used and, these results should allow us to find more reliable information. The survey being relevant, no changes are required.

Thanks to this method we get a better appraisal of press performances, by differentiating secondary or tertiary readers from more concrete or primary readers as well as understanding more the rereading of each title.

3 – Example of results

When the two types of correction are integrated (readers and rereading) we convert the readings of the CESP in readers. Usually the corrected number of readers is lower than counted by CESP, and the rereading is superior to 1. If we only consider CESP figures we overestimate the coverage of media plans and underestimate the repetition involving wrong results and wrong decisions.

The results of this method differ significantly according to the various types of press (table 9) :

- the correcting coefficients fluctuate between 35% (entertainment magazines) and 80% (TV guide)
- the rereading level fluctuates between 1,8 (sport magazines) and 4 (TV guides).

In general :

- the more the content of a magazine is timeless, the more the correction of audience is important (the risk of BIAS related to the time increasing).
- the greater the written editorial content, the more the rereading level is high.

TABLE 9

AUDIENCE CORRECTING
BY TYPE OF PRESS

	CORRECTING AUDIENCE COEFFICIENT	REREADING	POTENTIAL CONTACTS*
TV	80%	4	3,2
FAMILY	68%	2,2	1,5
NEWS	71%	1,5	1,1
WOMEN	69%	1,7	1,2
YOUNG	54%	2,2	1,2
SPORT	44%	1,8	0,8
ENTERTAINMENT	35%	3,4	1,2

* correcting coefficient x rereading.

4 - A comparison with the F.R.Y method

A survey, conducted by MEDIAMETRIE in 1989, measured the audience of TV magazines according to the F.R.Y method (First Reading Yesterday).

The comparison between the results of this method, the Gross CESP results and the results of our correcting audience method is relevant since it provides a validation of our method.

The F.R.Y method is based on the following methodology caracteristics :

- questionnaire items
  . Total Reading (over the last 12 month)
  . Reading Yesterday
  . Identification of the copie read the day before.
  . Date of the first reading (for the copie read the day before)
  . Number of copies read, out of the last 8 copies issued.
- The sampling is composed is of 5540 interviews
- The survey concerns exclusively the French TV guides.

Three audience measurement criteria are comparable in both method (table 10).

- Total reading

We obtain a great consistency between both methods figures :
  . the difference does not exceed plus or minus 10% for most of the titles.
  . the only title which obtains a CESP total reading significantly superior to the MEDIAMETRIE figure is also a title which has recently shown a significant audience increase. Infact, the period of both surveys are not exactly the same. (CESP : April 1989 - March 1990 vs MEDIAMETRIE March - April 1989).

– Last Reading Period (LDP)

We have compared :
. The gross LDP given by the CESP
. The CESP LDP corrected according to our method
. The F.R.Y LDP which is reconstituted according to the yesterday reading and the last date of reading.
Two notions have been distinguished by MEDIAMETRIE : the audience of the period of issue (7 days for a weekly) and the audience of the effective life (from the day of issue to the day of the last TV broadcast program).

The comparison reveals a great consistency between CESP corrected audience and audience of the period of issue.

Those results validate our method , since they demonstrate that the corrected audience match with the audience of the last copie issued which is measured by MEDIAMETRIE (no rereading of previous copies are integrated).

The limits of the F.R.Y method are revealed through the example of TELERAMA which is the only title obtaining a corrected audience significantly inferior to the MEDIAMETRIE audience figures.

TELERAMA has a specific content mainly focused on cultural and entertainment programs. It is the most "timeless" TV guide.

Neither the audience of the period of issue nor the audience of the effective life, could properly reflect this specific title.

– The Reading Yesterday

We have compared :

. the first eventuality given by the date of Last Reading measured by the CESP (yesterday or before yesterday).
. the Reading Yesterday reconstituted by our method (table 7)
. the Reading Yesterday directly measured by the F.R.Y method.

We obtain a great consistency between the adjusted Reading Yesterday according to our method and the Reading Yesterday of MEDIAMETRIE.

The comparison showing a great consistency between the correcting LDP method and the F.R.Y method, we consider that both of them are reliable.

Consequently the selection criteria which have to be considered are the price and the simplicity of both methods.

– If the CESP has the advantage of requiring a small sample size it has to be reinforced by a 6 point adjustment in our correcting method.

If CESP methodology induces a memory bias, involving confusion between readers and rereadings, this bias can be properly corrected by our method.

– If the F.R.Y method has the advantage of demanding little effort of memory, it calls for a big sample size and therefore a high price which could not be corrected by any method.

Considering the correcting LDP method is the easiest, the least expensive and the most interesting, we sincerely believe it to be the best.

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TABLE 10

A COMPARISON F.R.Y/LDP*
(000)

	TELE LOISIRS	TELE POCHE	TELE-RAMA	TELE 7 JRS	TELE STAR	TELE Z
TOTAL READING						
CESP	8.370	14.258	5.123	19.008	11.499	10.867
MEDIAMETRIE	8.085	13.239	5.637	18.449	10.639	6.791
REREADING RATE	3,5	3,6	6,2	4,2	4,2	4,4
CORRECTING COEFFICIENT	88%	84%	59%	79%	82%	68%
LDP					-	~
GROSS CESP	4.073	7.023	2.054	11.189	6.324	5.122
CORRECTED CESP	3.588	5.897	1.211	8.836	5.166	3.467
PERIOD OF ISSUE(MEDIAMETRIE)	3.863	5.899	2.417	10.053	5.397	3.412
EFFECTIVE LIVE (MEDIAMETRIE)	4.120	5.520	3.524	12.716	7.503	4.755
READING YESTERDAY						
GROSS CESP (YESTER.+BEFORE YESTERDAY)	2.549	4.364	1.416	7.322	4.142	3.082
READING YESTERDAY (AJUSTED CESP)	1.809	3.033	1.057	5.357	3.083	2.190
READING YESTERDAY (MEDIAMETRIE)	2.780	3.746	1.773	7.125	3.920	2.416

* LDP : CESP April 1989 - March 1990
F.R.Y : MEDIAMETRIE April - March 1989.

APPENDIX

LDP

	Périod i	**Périod i + 1**	**Périod i + 2**
Ni	$N_{i,i}$	$N_{i,i+1}$	$N_{i,i+2}$	....
N$_{i+1}$		$N_{i+1,i+1}$	$N_{i+1,i+2}$	....
N$_{i+2}$			$N_{i+2,i+2}$

$$N_{i,i} = N_{i+1,i+1} = N_{i+2,i+2}\cdots\cdots$$

$$N_{i,i+1} = N_{i+1,i+2} = N_{i+2,i+3}\cdots\cdots$$

$$N_{i,i+2} = N_{i+1,i+3}\cdots\cdots$$

$$\Longrightarrow \ LDP \quad = \sum N_{i,i} + N_{i,i+1} + N_{i,i+2}\cdots\cdots$$

$$= \sum_{j=i}^{+\infty} N_{i,j} \qquad i = \qquad \text{reading of an average copie (i)}$$

$$= \sum N_{i,i} + N_{i-1,i} + N_{i-2,i}\cdots\cdots$$

$$= \sum_{j=-\infty}^{i} N_{j,i} = \qquad \text{reading of any copie durly its week (i)}$$

The number of readings during the period of issue being constant over the time and the number of reading one week after being in average also constant over the time the induction can be conducted backward or forward. In fact :
- the total reading of a given copie (rereading included) is equivalent to
- the readings of any copie at a given date of issue.

This reveals the consistency existing between both methods : LDP and F.R.Y.