



CIM Television

Calculation and Reporting Rules

January 2020



These exploitation rules were created with the much appreciated assistance of:

- *SKO from the Netherlands who gave their permission to use elements and formulas from the document 'Calculation and Reporting Rules',*
- *Philippe Delhaise (Mediatrix) who compiled the basic copy regarding formulas and who corrected various revisions with the patience of angels.*



Introduction

The CIM has entrusted the CIM TV study for the period 2016-2019 to GfK Belgium for the audience study.

The contract for the time logging has been entrusted to Nielsen for the period of 2019-2022.

The aim of this document is to indicate how data should be calculated and how it can be used.

As part of the introduction of time shifted viewing, CIM has certified all TV software applications of the so-called TV software houses.

A list of certified companies is provided at www.cim.be.



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1. Usage of the data

The CIM TV data are available to all subscribers of the CIM TV study. A list of entitled subscribers is posted at <http://www.cim.be/fr/television/liste-des-souscripteurs>

The subscribers must respect the rules regarding the communication of data. These rules are available at www.cim.be and in paragraph 3.

Only CIM-certified software houses may warrant use of CIM TV data. They are held to strict confidentiality and may under no circumstances use the CIM TV data in any other form. Every situation that is cause for the slightest doubt should be submitted to the CIM.

The issue of these calculation and reporting rules is prompted by the availability of data regarding time shifted viewing in the Belgian market.

- Until then, the currency in TV land is the familiar 'live' viewing on the day of broadcast.
- After the introduction of time shifted viewing, this has changed: the currency was all of 'live' television watching + all time shifted viewing (the definition follows in 2.2.1).
- In 2013 a new currency was introduced into the study: Live+6+Guests: all of 'live' television watching + all time shifted viewing + viewing behaviour of guests.
- In 2016 a new currency was introduced into the study: Live+7+Guests. The time shifted viewing was extended until the 7th day after broadcasting.

Analysis and reporting on the basis of other viewing definitions remain possible, but they should be clearly specified and can no longer serve as currency.



1.1 Rules concerning the use of CIM TV data

1.1.1 Data for Subscribers

Two files are generated on a daily basis for subscribers of the CIM TV study:

- ATA file: data per second, complete list of all TV channels. These files are made available to TV channels and their national advertising producers, rank 1 subscribers, who have subscribed for this.
- ATB file: data per second for national subscribed TV channels in addition to aggregated data per quarter for all other TV channels who earn at least 1% market share in the complete universe (4 years and older) (only ratings and share). This file thus contains 2 different levels of detail depending on the channel, and the number of reported channels is limited. These files are made available to intermediaries.

The following regroupings are included:

- Other channels – Dutch-speaking
- Other channels – French-speaking
- Other channels – neither Dutch nor French nor satellite, VCR + DVD+Perif., Pay TV + DVR, Play console + other screen usage

1.1.2 Data for other CIM members

CIM members who are not subscribed to the CIM TV study can request monthly channel reports (*MZR*). A report can be provided by a choice of target group and hour slot with the average day reach, week reach, month reach and market share of a TV channel.

1.1.3 Which data can be included in external communication?

The data that every subscriber of the CIM TV study can use in its external communications are only the data for channels that are found in the ATB file, the pre-calculated channels or channels with a monthly broadcasting reports (*MZR*). In other words, communicating the data found in the ATA file externally that are not found in the mentioned files above is prohibited.

It is also precluded for the CIM that a TV channel is compared on the basis of figures per second with a TV channel on the basis of quarterly figures. If one of the TV channels is reported per quarter in the AUB file, in a comparison with other TV channels, the latter must also be indicated on the basis of data per quarter, even if data per second is available.

In the published figures, one must draw a distinction between CIM TV figures and estimates based on CIM TV figures. In the latter case, one must state 'estimate of ... based on CIM TV figures'.

The terminology and calculation rules as indicated in the annual report of 2000-2001* must be respected by the users of the CIM TV data.

* Can be downloaded from <http://cim.be/media/Televisie>



From 1 January 2006, the variable of **Total TV** was redefined and is now in line with the European standard as used by most countries.

Total TV contains in its new definition of the following elements:

- All individual broadcasters (registered via EAM, Picture Matching and/or CNI code)
- 'Other TV' broadcasters
- Satellite Receiver

In addition, there is the variable **Total screen usage**.

As the term suggests, this regards the total number of all screen use. It is mainly the sum of **Total TV** plus the following ancillary equipment:

- Video recorder
- Other hardware device (camera, PC, etc.)
- Game console (Sony PlayStation, Microsoft X-Box, etc.)
- Set-top box (Telenet Digibox, Proximus TV, etc.)
- Pay-TV decoder (Prime, Canal+, BE TV, etc.)
- DVD (reader, writer, reader + VCR, etc.)
- Connected TV (Smart TV's, Chromecast, Apple TV,...)

Minimum number of individuals in the choice of target groups

The following guideline also applies: a **minimum of 300 individuals** must be represented in the random sample size of a selected target group.

If the number of 300 individuals is not achieved, the CIM requests that this be mentioned in the reporting.

For more information, please contact CIM:
02 661 31 53 (tv@cim.be)



2. Calculation rules

2.1 Calculation rules “live”

2.1.1 Reference universes

The following definitions of reference universes have already been in use since 1997 (Methodological report CIM TV – version of March 2007) and do not change. They are included here for the sake of completeness.

The reference universe is the population for which the study wants to establish a representative measure of television viewing behaviour. The definition of the reference universe remains constant but numbers vary according to the calendar year, depending on how the population evolves.

The **Total Reference Universe** is the Dutch-speaking and French-speaking population aged 4 and over, residing on Belgian territory (including foreign nationals), and who belong to a household that has at least 1 television set at its disposal.

Because of the regional division of Belgium, in practice two sub-universes have been delineated.

North Universe: all people who meet the above definition and that live in the region of Flanders or Brussels (defined as the Nielsen 3 region) and who are Dutch-speaking.

South Universe: all people who meet the above definition and that live in the region of Wallonia or Brussels (defined as the Nielsen 3 region) and who are French-speaking.

The composition of the television panel may vary slightly per day: sometimes new people are added, other people leave the panel, sometimes the information for a family is missing for technical reasons... To obtain representative viewing figures every day, all members of the panel are thus weighted every day to obtain a perfect match with the reference universe. This ‘daily weight’ is a basic parameter for the correct calculation of viewing figures.



2.1.2 Broadcast parameters

When identifying television broadcasts, different parameters are used by the CIM for time logging:

- Type: A = programme, B = break, C = auto-promotion.
- Genre: e.g. 11=film.
- Title: description of the time-logged element.
- Level: level 1, 2, 3 or 4:
The TV-log is in fact like a tree. Some programs of level 1 can contain elements of level 2 (program, break or auto-promotion). Programs of level 2 can also contain elements at level 3 and programs of level 3 can contain elements at level 4.
- Section: if an element can be considered as a section of a 'father' program, the value is S; in all other cases it is N.
A classical example are parts of a film or series separated by breaks and/or auto-promotions and/or infomercial, etc. Another example would be the different parts of a football program.
- Please take into consideration that some programs like infomercial can appear at level 2 and still be considered as a main program. A typical example would be a movie with 2 levels wherein we find infomercial identified as level 2 N.A. instead of level 1 N.A. (due to the fact that the movie has not ended yet). Such program does not belong to the main event (in this example, the movie) and its rating and duration will not be taken into account while doing your calculation for rating, duration, etc. of the main event.

You can find the list of Genre codes on the methodology page of the CIM TV section of the CIM website.

http://www.cim.be/sites/default/files/Media/Televisie/Documents/CIM%20TV%20-%20Horodatage%20-%20New%20typology%20-%20Final%20-%20List_0.pdf

These parameters are included in the results of the CIM TV study. The following chart provides an illustration:

Channel	Weekday	Date	Hour	Duration	Type	Genre	Level	Section?	Title
CLUB	Mon	14-janv-2008	20:09:17	10998s	T=A	[faa]	1		FOOT. CB. 1/8F
CLUB	Mon	14-janv-2008	20:09:17	820s	T=A	[faa]	2	1	FOOT. CB. 1/8F:(DEBUT)
CLUB	Mon	14-janv-2008	20:22:57	249s	T=B	[ha]	2		LFT2
CLUB	Mon	14-janv-2008	20:27:06	321s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	20:32:27	6647s	T=A	[faa]	2		FOOT. CB. 1/8F:STANDARD/GENK
CLUB	Mon	14-janv-2008	20:32:27	2751s	T=A	[faa]	3	1	FOOT. CB. 1/8F:STANDARD/GENK (1MT)
CLUB	Mon	14-janv-2008	21:18:18	76s	T=A	[fal]	3		FOOT. CB. 1/8F:STANDARD/GENK: PAUSE
CLUB	Mon	14-janv-2008	21:19:34	100s	T=B	[ha]	3		LFT3
CLUB	Mon	14-janv-2008	21:21:14	30s	T=C	[ia]	3		PROMOTION DE LA CHAINE
CLUB	Mon	14-janv-2008	21:21:44	350s	T=A	[fal]	3		FOOT. CB. 1/8F:STANDARD/GENK: PAUSE
CLUB	Mon	14-janv-2008	21:27:34	177s	T=B	[ha]	3		LFT4
CLUB	Mon	14-janv-2008	21:30:31	347s	T=A	[fal]	3		FOOT. CB. 1/8F:STANDARD/GENK: PAUSE
CLUB	Mon	14-janv-2008	21:36:18	2816s	T=A	[faa]	3	1	... FOOT. CB. 1/8F:STANDARD/GENK (2MT)
CLUB	Mon	14-janv-2008	22:23:14	523s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	22:31:57	179s	T=B	[ha]	2		LFT5
CLUB	Mon	14-janv-2008	22:34:56	449s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	22:42:25	6s	T=C	[id]	2		HABILLAGE D'ANTENNE
CLUB	Mon	14-janv-2008	22:42:31	61s	T=B	[ha]	2		LFT6
CLUB	Mon	14-janv-2008	22:43:32	8s	T=C	[id]	2		HABILLAGE D'ANTENNE
CLUB	Mon	14-janv-2008	22:43:40	41s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	22:44:21	1529s	T=A	[faa]	2		FOOT. CB. 1/8F:CS.BRUGES/FC.BRUGES (R.)
CLUB	Mon	14-janv-2008	23:09:50	165s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)



A 'BRUTO' (gross) programme is defined by a start and an end of a programme, without extracting parts as commercial spots, auto-promotion, breaks,...

A 'NETTO' (net) programme is defined by a start and an end of a programme, excluding the commercial spots, auto-promotion, infomercial... = netto programme.

2.1.3 The CIM audience Threshold

a. Viewing duration

The sample data is available per second. For some metrics, the CIM has set a minimum of viewing time.

For example viewing for at least 1 min / 10 min =

- Anyone who watched a programme, a time band or a channel at least 60/600 seconds.
- This needs regrouping of different STATS-lines per viewing type (live, TSV):
HOME-ID
MEMB-ID or GUESTID
TV-NUMBER
CHANNEL or VIRTUAL CHANNEL
ACTIVITY CODE = TV and Overlay

This regrouping is sufficient for non-consecutive viewing.

If the viewing needs to be consecutive the regrouping is more stringent. The conditions are enlarged to identify consecutive viewing of a person in case of different statements (e.g. different statements due to arrival of other panel members or guests):

- The regrouping of different STATS-lines per viewing type:
HOME-ID
MEMB-ID or GUESTID
TV-NUMBER
CHANNEL or VIRTUAL CHANNEL
ACTIVITY CODE = TV and Overlay
END TIME STATS_{x-1} = STARTING TIME STATS_x

As the lower threshold of a programme reach, the CIM has set a minimum of 60 consecutive seconds viewing a programme.

In addition, the user is free to determine or set a higher minimum viewing duration and whether this must be consecutive or not, and to choose whether someone must have watched one or more programmes to count as part of the programme reach.

How long someone must have watched one or more programmes can either be stated in minutes or as a percentage.

Frequently occurring values include: a minimum of 1 consecutive minute, a minimum of 10 minutes and a minimum of 10 consecutive minutes.

b. % of viewing

The CIM defines viewing a spot as having contact with a spot during at least half of its duration in its time slice. See 2.1.4 e.



2.1.4 Rating calculation rules

a. Programmes

The rating of a programme is defined as the average percentage of viewers per second within the reference universe that watched this programme. The respondents in the random sample are weighted with a weight determined by the extent to which they occur in the total population of viewers in the reference universe.

$$rating_i = \frac{\sum_{r=1}^R w_r p_{r,i}}{\sum_{r=1}^R w_r} \times 100\%$$

rating_i: rating for programme *i*

R: number of respondents in the sample

w_r: weight of respondent *r*

p_{r,i}: proportion of the programme *i* viewed by respondent *r*

Where the proportion is equivalent to:

$$p_{r,i} = \frac{V_{r,i}}{\text{duration}_i}$$

V_{r,i}: Viewing duration of respondent *r* for programme *i*

Duration_i: duration of programme *i*

b. Time bands

The rating of a time band is defined as the average percentage of viewers per second within the reference universe that watched this/these channel(s) during this time band.

$$rating_t = \frac{\sum_{r=1}^R w_r p_{r,t}}{\sum_{r=1}^R w_r} \times 100\%$$

rating_t: rating for time band *t*

R: number of respondents in the sample

w_r: weight of respondent *r*

p_{r,t}: proportion of time band *t* viewed by respondent *r*

Averages per time band, over multiple days, should be calculated as follows: a data file is calculated on a daily basis for the relevant target group including the rating per channel, per second, rounded up to a minimum precision of six decimals. These data are then used to calculate averages over multiple days, rounded off to the desired number of decimals.



c. Total TV

The Total TV rating is defined as the average percentage of viewers within the reference universe who watched one channel or another during a programme or time band.

$$rating_{z,t} = \sum_{z=1}^Z rating_{z,t}$$

rating_{z,t}: Total TV rating for time band *t*

rating_{z,t}: rating for channel *z* in time band *t*

Z: total number of channels

Total TV comprises the following elements:

- All individual channels (registered via EAM and/or Picture Matching and/or CNI code)
- 'Other TV' channels
- Satellite Receiver

d. Total Screen Usage

As the term suggests, this regards the total number of all screen use. It is mainly the sum of Total TV plus the following ancillary equipment:

- Video recorder
- Other hardware device (camera, PC, etc.)
- Game console (Sony PlayStation, Microsoft X-Box, etc.)
- Set-top box (Telenet Digibox, Belgacom TV, etc.)
- Pay-TV decoder (Prime, Canal+, BE TV, etc.)
- DVD (reader, writer, reader + VCR, etc.)

BEWARE: both Total TV and Total Screen Usage should be based on the Station code (never the Source code).¹

e. Spots

Viewing a spot is a Boolean variable: it is true (1) or false (0). The CIM defines viewing a spot as having contact with a spot during at least half of its duration in its time slice.

Timings and durations are expressed in integer numbers and can be even or odd

Let us define:

- *l(s)* = the length of a spot *s* in seconds
- *nS(r,s)* = the number of seconds of spots viewed by respondent *r*, consecutive or not.

¹ The Station code (field 2) indicates which channel or station has been watched. This might be an individual channel (registered via EAM and/or Picture Matching and/or CNI code) or any other peripheral equipment (DVD, DVB, VCR,...). This value is different from the Source code (field 9). The Source code indicates which device generates the signal: 0=TV, 1=VCR, 2=SATELLITE, 3=PAY, 4=DVD, 5=DVB, 6=PLAY, 7=OTHER DEVICE, 8=Connected TV (see 5.3 Description of ATA-ATB and TSV files).



The contact value of spot s for respondent r is then a variable with two states:

- $c(r,s)=1$ (true), if $nS(r,s) \geq \text{ceiling}(l(s)/2)$
- $c(r,s)=0$ (false), if $nS(r,s) < \text{ceiling}(l(s)/2)$

Since time is an odd or even integer, the ceiling function is used to transform the result of the division in the nearest integer.

Example for a spot of 21 seconds:

- $c(r,s) = 1$ if $nS(r,s) \geq 11$
- $c(r,s) = 0$ if $nS(r,s) < 11$

The rating of a spot is defined as the percentage of viewers within the reference universe who have seen at least half of the spot.

$$rating_s = \frac{\sum_{r=1}^R w_r c(r,s)}{\sum_{r=1}^R w_r} \times 100\%$$

rating_s: rating for spot s

R : number of respondents in the sample

w_r : weight of respondent r

$p_{r,s}$: =1 if respondent r saw $nS(r,s)$ or more seconds of this spot with $NsecondsMin = \text{ceiling}(lengths/2)$, else = 0.

f. Blocks of advertising

A block of advertising usually starts and ends with a jingle. The rating of the block is not calculated on the basis of the individual ratings of the spots, but on the basis of the starting and ending time of the block. The jingles are included in the calculation of the rating of the blocks of advertising.

The calculation is identical to that of programmes and time bands (see a. and b. above).

2.1.5 Market share calculation rules

Until the introduction of Time Shifted Viewing, the market share was defined as the percentage of viewers of a broadcast or time band, based on the total viewing audience. Market share is calculated by dividing the rating of a programme or time band by the rating of total channels in the relevant programme or time band.

$$marketshare_{z,t} = \frac{rating_{z,t}}{rating_{z,t}}$$

Both Total TV and Total Screen Usage can be used as a reference within the software application.



2.1.6 Reach calculation rules

a. Programme

The programme reach is defined as the percentage of viewers who watch one programme at least once for a certain time.

$$reach_t = \frac{\sum_{r=1}^R w_r d_{r,t}}{\sum_{r=1}^R w_r} \times 100\%$$

$$d_{r,t} = \begin{cases} 1 & j_{r,t} \geq J \\ 0 & j_{r,t} < J \end{cases}$$

I : series of programmes

d_{r,t}: 'dummy' that indicates whether respondent falls within the programme rating according to specific definition

J: criterion for the specific programme rating (e.g. 60 consecutive seconds)

R: number of respondents in the sample

w_r: weight of respondent *r*

j_{r,t}: calculated according to the specific conditions, personal criterion of respondent for the programme series *I*

b. Reach of a channel

The reach of a channel is defined as the percentage of viewers who have watched a certain channel at least once for a certain time (duration).

2.1.7 Viewing Time calculation rules

The viewing time is defined as the average time that viewers watched a programme or a channel during a time band, expressed in seconds.

$$viewing\ time_t = \frac{\sum_{r=1}^R w_r V_{r,t}}{\sum_{r=1}^R w_r}$$

viewing time_t: viewing time in time band *t*

R: number of respondents in the random sample

w_r: weight of respondent *r*

V_{r,t}: viewing time of respondent *r* in time band *t*



2.1.8 Special calculation rules

a. Genre average

As indicated above (see 2.1.2) there is a tree structure in the genre codes of TV broadcasts. When determining the average reach of genre codes, the fact that the same genre can occur at different levels must be taken into consideration. This creates the risk of a broadcast being counted twice.

The simplest way to avoid this is to only calculate the average for identical levels: 1, 2 or 3. Combining different codes is only permitted if it is unquestionably clear that no minutes are counted double.

As an example we take the next scheme from paragraph 2.1.2 of one football match:

Channel	Weekday	Date	Hour	Duration	Type	Genre	Level	Section?	Title
CLUB	Mon	14-janv-2008	20:09:17	10998s	T=A	[faa]	1		FOOT. CB. 1/8F
CLUB	Mon	14-janv-2008	20:09:17	820s	T=A	[faa]	2	1	FOOT. CB. 1/8F:(DEBUT)
CLUB	Mon	14-janv-2008	20:22:57	249s	T=B	[ha]	2		LFT2
CLUB	Mon	14-janv-2008	20:27:06	321s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	20:32:27	6647s	T=A	[faa]	2		FOOT. CB. 1/8F:STANDARD/GENK
CLUB	Mon	14-janv-2008	20:32:27	2751s	T=A	[faa]	3	1	FOOT. CB. 1/8F:STANDARD/GENK (1MT)
CLUB	Mon	14-janv-2008	21:18:18	76s	T=A	[fal]	3		FOOT. CB. 1/8F:STANDARD/GENK:PAUSE
CLUB	Mon	14-janv-2008	21:19:34	100s	T=B	[ha]	3		LFT3
CLUB	Mon	14-janv-2008	21:21:14	30s	T=C	[ia]	3		PROMOTION DE LA CHAINE
CLUB	Mon	14-janv-2008	21:21:44	350s	T=A	[fal]	3		FOOT. CB. 1/8F:STANDARD/GENK:PAUSE
CLUB	Mon	14-janv-2008	21:27:34	177s	T=B	[ha]	3		LFT4
CLUB	Mon	14-janv-2008	21:30:31	347s	T=A	[fal]	3		FOOT. CB. 1/8F:STANDARD/GENK:PAUSE
CLUB	Mon	14-janv-2008	21:36:18	2816s	T=A	[faa]	3	1	... FOOT. CB. 1/8F:STANDARD/GENK (2MT)
CLUB	Mon	14-janv-2008	22:23:14	523s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	22:31:57	179s	T=B	[ha]	2		LFT5
CLUB	Mon	14-janv-2008	22:34:56	449s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	22:42:25	6s	T=C	[id]	2		HABILLAGE D'ANTENNE
CLUB	Mon	14-janv-2008	22:42:31	61s	T=B	[ha]	2		LFT6
CLUB	Mon	14-janv-2008	22:43:32	8s	T=C	[id]	2		HABILLAGE D'ANTENNE
CLUB	Mon	14-janv-2008	22:43:40	41s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)
CLUB	Mon	14-janv-2008	22:44:21	1529s	T=A	[faa]	2		FOOT. CB. 1/8F:CS.BRUGES/FC.BRUGES (R.)
CLUB	Mon	14-janv-2008	23:09:50	165s	T=A	[faa]	2	1	... FOOT. CB. 1/8F:(SUITE)

If one wants to calculate the average for code faa for **different** football matches, this must be done at the same level: the average of every part of the game (level 3) or the average of level 2 or 1. Attention: fal stands for interviews before and after the game.



b. Multiple broadcasts

Cumulative rating

The cumulative rating is defined as the added ratings for multiple broadcasts.

$$\text{cumulative rating} = \sum_{i=1}^n \text{rating}(i)$$

Cumulative rating: cumulative rating for n programmes

n: number of programmes

rating_i: rating for programme i

Weighted average rating

The weighted average rating is defined as:

$$\text{weighted average rating} = \frac{\sum_{i=1}^N \text{rating}(i). \text{duration}(i)}{\sum_{i=1}^N \text{duration}(i)}$$

Weighted market share

The weighted market share as being

$$\text{weighted market share}\% = 100. \frac{\sum_{i=1}^N \text{rating}(i). \text{duration}(i)}{\sum_{i=1}^N \text{totalTV}(i). \text{duration}(i)}$$

c. On the basis of daily sampling

Daily sampling is used for all results that pertain to one day and to averages over multiple days.

A daily sample includes all panel members of families who were successfully polled for that day. This involves all individuals for which the data is contained in the demographic files of gross files. No a posteriori adaptations or corrections are to be made.

d. On the basis of a periodic sampling (more than 1 day)

The weighted factor for each respondent from the periodic sampling is calculated by taking the mean of the daily weights of the respondent. The denominator is the total number of days of the periodic sampling on which a broadcast occurred.

When dealing with target groups over a longer period of time, some Panellists may join or leave this target group. A panellist could for example have his 30st birthday within the analysed period, and no longer be part of the target group 'Females 18-29 yr'. If socio-demographical characteristics change within the analysed period, only the days on which the panellist has the characteristics of the target group should be taken into account. All other days he should receive a weight of 0.

e. Guests

The age and gender of each registered guest is known (see 4.1). Until 1/1/2013 guests were not included in the calculations.



Guests were only taken into consideration for the weekly top 20 and annual top 100 of the CIM TV figures.

From 1/1/2013 guests are profiled in the CIM TV study and guest viewing is part of the official currency of the CIM TV study. The viewing behaviour of the guest is linked to a panel member that isn't watching at that time. The link based on 4 parameters: region (North – South), gender, age category (4-11, 12-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65+) and type of set top box.

The documentation on guest viewing is available on the CIM website:

http://www.cim.be/sites/default/files/Media/Televisie/Documents/CIM%20TV%20-%20Info%20guest%20viewing_FR.pdf.

http://www.cim.be/sites/default/files/Media/Televisie/Documents/CIM%20TV%20-%20Info%20guest%20viewing_FR.pdf

f. Rounding

All calculations take place without rounding.

If the result types are determined in the meantime, they are rounded to a minimum of 6 decimal places. The number of possible deviations in respect of the reference is thus negligible.



2.2 Calculation rules “live+7”

2.2.1 Basic Principle

Time Shifted Viewing (TSV) is the term used for watching recorded programmes via VCR, DVD or DVB:

- Time shifted viewing on the actual day of broadcast (Day 0) is also called Vosdal ('Viewing on the same day as live').
- In the CIM TV study, time shifted viewing is identified as TSV up until 7 days after broadcast (Day 0 to Day 7 inclusive). The total of this TSV is called “+7”
- If a programme is viewed longer than seven days after broadcast, the viewing process remains identified as VCR, DVD or DVB.

In order to determine whether the viewer is watching live or time-shifted, the content of the broadcast on the viewed channel is compared with the broadcasts of the channel as it was registered live on the so-called 'Reference site'. This occurs in steps:

- The viewing process is first compared to the so-called 'Reference process': the live broadcast and all broadcasting to a maximum of 1.5 hours before that;
- If no match is found, then a search is performed in the period up to seven days before that for the first broadcast that does match;

If no match is found, the viewing process remains VCR, DVD or DVB.

Viewing processes cannot be ascribed to reference processes that are in the future.

Time shifted viewing behaviour is only calculated for persons in the random sample of the day of broadcast. Time shifted viewing behaviour of persons who do not belong to the panel on the day of broadcast is reported as 'Video', 'DVD' or 'HD'.

TSV will be available for the channels from the B-files, the channels reported per quarter (of an hour) and the channels with Monthly Broadcasting Reports:

You can download the list of participating channels in the CIM TV study on the CIM website: <http://www.cim.be/sites/default/files/Media/Televisie/Documents/cimtv-stationlist.xlsx>

As of 1 January 2016, CIM considers all 'live' television viewing + all time shifted viewing from Day 0 to Day 7 + Guest viewing as currency. From 01/01/2010 through 31/12/2015 the currency was 'live+6+Guests'



2.2.2 Rating “live+7” calculation rules

a. Programmes

The rating of a programme is defined as the average percentage of viewers per second within the reference universe of the broadcasting day that watched this programme live or time shifted. The respondents in the random sample are weighted with a weight determined by the extent to which they occur in the total population of viewers in the reference universe of the broadcasting day. Time shifted viewers that were not present in the universe on the broadcasting day are not taken into account.

$$rating_i = \frac{\sum_{r=1}^R (w_r p_{r,i, live} + w_r p_{r,i, tsv})}{\sum_{r=1}^R w_r} \times 100\%$$

rating_i: rating for programme *i*

R: number of respondents in the sample (broadcasting day)

w_r: weight of respondent *r* (broadcasting day)

p_{r,i, live}: proportion of the programme *i* viewed live by respondent *r* where the proportion is equivalent to:

$$p_{r,i, live} = \frac{V_{r,i}}{\text{duration}_i}$$

V_{r,i}: Viewing duration of respondent *r* for programme *i*

Duration_i: duration of programme *i*

p_{r,i, tsv}: proportion of the programme *i* viewed time shifted by respondent *r* where the proportion is equivalent to:

$$p_{r,i, tsv} = \sum_{TSV0}^{TSV6} \frac{V_{r,i}}{\text{duration}_i}$$

V_{r,i}: Viewing duration of respondent *r* for programme *i*

Duration_i: duration of programme *i*

TSV 0: time shift in the broadcasting day

TSV 1: time shift one day after the broadcasting day

...

TSV 7: time shift seven days after the broadcasting day



b. Timebands

$$rating_t = \frac{\sum_{r=1}^R (w_r p_{r,t, live} + w_r p_{r,t, tsv})}{\sum_{r=1}^R w_r} \times 100\%$$

rating_t : rating for time band *t*

R: number of respondents in the sample

w_r: weight of respondent *r*

p_{r,t, live}: proportion of the time band *t* viewed live by respondent *r*

p_{r,t, tsv} : proportion of the time band *t* viewed time shifted by respondent *r*

Averages per time band, over multiple days, should be calculated as follows: a data file is calculated on a daily basis for the relevant target group including the rating per channel, per second, rounded up to a minimum precision of six decimals. These data are then used to calculate averages over multiple days, rounded off to the desired number of decimals.

2.2.3 “live+7” reach for a programme

The programme reach is defined as the percentage of viewers who watch one programme at least once for a certain time, live or time shifted.

$$reach_t = \frac{\sum_{r=1}^R w_r d_{r,I}}{\sum_{r=1}^R w_r} \times 100\%$$

$$d_{r,I} = \begin{cases} 1 & j_{r,I} \geq J \\ 0 & j_{r,I} < J \end{cases}$$

I : series of programmes

d_{r,i}: ‘dummy’ that indicates whether respondent falls within the programme rating according to specific definition

J: criterion for the specific programme rating (e.g. 60 consecutive seconds)

R: number of respondents in the sample

w_r: weight of respondent *r* (broadcasting day)

j_{r,i}: the sum of live and time shifted viewing, calculated according to the specific conditions, personal criterion of respondent for the programme series



2.2.4 "live+7" share

"Live+7" marketshare is calculated by dividing the "live+7" rating of a programme or time band by the "live+7" rating of all channels in the relevant programme or time band.

Both Total TV and Total Screen Usage can be used as a reference within the software application.

$$\text{"live+7" marketshare}_{ch,t} = \frac{\text{"live+7" rating}_{ch,t}}{\text{"live+7" rating}_{CH,t}}$$

with ch=channel, CH=all channels, t=time band

2.2.5 Specific Variables

a. Time Shift Delay

The Time Shift Delay (TSD) is the average number of minutes between the recording of programmes and the playing of the programmes.

This is defined as the average number of minutes between the starting time of the Live Broadcast Time (LBT) until six days before that and the start of viewing (Time Shifted Viewing Moment = TSVM).

$$TSD = (\sum(TSVM_i - LBT_0)) / n$$

where

1 >= TSD <= 10080 minutes

TSVM_i = Average Time Shifted Viewing Moment in day I (DD:HH:MM:SS in seconds)

i = 0, ..., 6

LBT₀ = Live Broadcast Time on day 0 (DD:HH:MM:SS in seconds).

n = number of TSV viewings

b. Market share in total TSV

This concerns the achieved TSV of a programme or time band with respect to the total TSV (until six days after the broadcast).

This is a different result type than the Market Share TSV, because in the denominator the sum of all the TSV occurring during a week is used.

$$MS\ TSV = \frac{\text{Time shifted rating}_t}{\text{Time shifted rating (T)}} \quad (\%)$$

t = 1, ..., t series of Time Bands

T = 1+...+t total Time Band in days 1 to 7, where Time Bands do not overlap

0 <= MS TSV <= 100%



c. Share of TSV in rating

This is the share of TSV in the total rating of the programme or time band (Live plus TSV).

$$TSV\ Share = \frac{\text{Rating TSV Programme/Time Band}}{\text{Total rating of Programme/Time Band}} \quad (\%)$$

$$0 \leq TSV\ Share \leq 100\%$$

d. 'day share' in TSV

This concerns the relative share of TSV according to programme or time band per day, as compared to the total TSV for a programme or time band.

$$Day\ share\ in\ TSV = \frac{\text{Time shifted rating programme or time band on day x}}{\text{Total Time shifted rating programme or time band}} \quad (\%)$$

$$0 \leq Day\ share\ in\ TSV \leq 100\%$$

2.2.6 Special calculation rules

a. Guests and Live+7

Until 31/12/2016 only guests present on the actual day of broadcast (Day0) could be included in Live+6/7 analyses. Guest could therefore not be included in TSV other than Vosdal ('Viewing on the same day as live'). On 01/01/2017 Guest viewing was included for all TSV, and should thus be included in all Live+7+Guests analyses.

b. Total Screen Usage and Live+7

Since the introduction of TSV, two different interpretations of TSU are possible:

- one based on the TSU for a particular broadcasting day = TSU_{Live+7} ,
- and one based on the TSU for a particular viewing day = $TSU_{Overnight}$.



TSU_{Overnight} = TSU on day X, taking into account Vosdal + TSV from the last 7 days.
This is the total amount of seconds viewed on day X as in the ATA/ATB file.

It is calculated as **the sum of Live + Vosdal + TSV from past 7 days + OSU** with:

- Live: all stats with station-code² ≠ VCR - Other - Play - DVB - Pay - DVD (ATA) AND VCR | DVD | PAY | DVB | Play | Other (ATB) and TSV-code³ = 0 (no TSV);
- Vosdal: Viewing On the Same Day As Live;
- TSV-1|-7: Playback TSV-1 + TSV-2... TSV-7 = TSV from the past;
- OSU: all stats with station-code = VCR - Other - Play - DVB - Pay - DVD (ATA) AND VCR | DVD | PAY | DVB | Play | Other (ATB) and TSV-code = 0 (no TSV).

TSU_{Live+7} = TSU on day X, increased with viewing time from Vosdal + TSV from the next 7 days

It is calculated as **the sum of Live + Vosdal + TSV+1->+7 + OSU** with:

- Live: *identical* to Live as defined for TSU_{Overnight};
- Vosdal: *identical* to Vosdal as defined for TSU_{Overnight};
- TSV+1|+7: TSV as delivered in the TSA/TSB files in the days after the broadcast day;
- OSU: *identical* to OSU as defined for TSU_{Overnight}.

The scheme below summarizes the difference between TSU_{Overnight} and TSU_{Live+7}.

Broadcasting day x	Viewing day x	Viewing day x+0	Viewing day x+1	...	Viewing day x+6	Viewing day x+7
Live day x	Live day x	Live day x	Live day x	...	Live day x	Live day x
Vosdal day x		Vosdal day x	Vosdal day x	...	Vosdal day x	Vosdal day x
OSU day x	OSU day x	OSU day x	OSU day x	...	OSU day x	OSU day x
TSV x-1 till x-7			TSV x+1	...	TSV x+1	TSV x+1 till x+7
				
					TSV x+6	
TSU_{Overnight}	TSU _{live}	TSU _{live+0}	TSU _{live+1}	...	TSU _{live+1}	TSU_{Live+7}

TSU_{live+1} may not be used in analyses of programme variables because this value is intermediate and not complete.

² Not to be confused with the Source code, a new field compared to the former AUA-AUB file that indicates which device generates the signal (see 5.3 Description ATA-ATB and TSV files).

³ A new field added to the ATA-ATB file which indicates if a statement is time shifted yes or no (0=no, 1=yes).



c. Sources

The introduction of the Source code (field 9, see 5.3 Description of ATA-ATB and TSV files) makes it possible to analyze the strength of different sorts of peripheral equipment⁴.

The scheme below illustrates the repartition of the different sources, how this evolves over time and how this results in TTV and TSU (fictive example based on seconds). In the columns you'll find the different sources and the results for TTV and TSU. In the rows you'll find the results for Live, Live+Vosdal, Live+1,..., and the OSU (based on the Station code). When moving from Live to Live+Vosdal, Live+1,... the amount of seconds per source will increase. The only exceptions are TV and Satellite as these devices do not allow recording a program and hence it is impossible to have TSV on these sources.

Source	TV	VCR	Sat	DVD	DVB	PLAY	Other	CTV	Total TV 2006+	Total Screen Usage
Live+Playback	94.210	3.422	4.709	72.022	1.248.284	2.965	22	27.207	1.452.841	1.715.435
Live	91.959	3.266	4.345	61.763	1.047.241	2.304	12	21.973	1.232.864	1.495.457
Live+0 (Live+Vosdal)	93.093	3.361	4.486	66.446	1.150.647	2.600	12	24.531	1.345.177	1.607.770
Live+1	93.651	3.379	4.489	68.809	1.194.566	2.852	14	25.775	1.393.535	1.656.129
Live+2	93.775	3.391	4.494	69.785	1.212.355	2.895	14	26.261	1.412.970	1.675.564
Live+3	93.845	3.457	4.499	70.585	1.224.947	2.974	14	26.504	1.426.825	1.689.419
Live+4	93.931	3.463	4.503	71.170	1.233.179	2.994	14	26.778	1.436.031	1.698.624
Live+5	93.955	3.472	4.503	71.857	1.239.834	3.007	14	26.923	1.443.566	1.706.159
Live+6	93.972	3.476	4.506	72.483	1.245.598	3.023	14	27.107	1.450.179	1.712.773
Live+7	94.031	3.547	4.549	72.881	1.250.862	3.076	14	27.395	1.456.355	1.718.948
OSU	0	988	0	66.215	154.317	10.308	934	29.831	262.593	
TSU/Source	94.031	4.535	4.549	139.096	1.405.179	13.383	949	57.225	1.718.948	1.718.948

CIM TV: Belgium; 4+; week 8 2017

⁴ The calculation of Total TV (TTV) and Total Screen Usage (TSU) (as described in 2.1.4 Rating calculation rules) remains unchanged and is still based on the Station code.



2.3 Algorithm for the evaluation of advertising campaigns (“Live+7”)

2.3.1 General calculation rules for campaign evaluations

The general calculation rules for the CIM TV study have been used since 1997.

a. Main variables

The main variables in the post-evaluation of an advertising campaign are:

- Total coverage in %: percentage of target universe having seen a minimum of one spot
- OTS: Opportunity To See. This is the average number of contacts each person has with the spot.
- Contact distribution: cov%(k): percentage persons in the target universe who had k contacts with the spot.
- Daily GRP of each spot
- Total GRP of the campaign

Like all TV variables, all computations described in this chapter can be computed for a particular target. The only difference between computation for one target and for the Universe is that the sample is restricted to the persons belonging to the specified target group. We will therefore explain the algorithm for the Universe only.

b. Definition of a campaign

A campaign is a list of spots (events) broadcasted during a limited period of time.

- In CIM TV a campaign may not cross year boundaries.
- It is never a good solution to evaluate campaigns over too long periods because this will reduce the quality of the panel: not only some audimeters may not answer on specific days but also more members may enter and exit from the panel during the period.

A campaign is defined in the following way:

Day id	Spot id	Date	Channel	Start time	Duration
d1	s1	18-aug-2008	CH3	19:00:00	31
d1	s2	18-aug-2008	CH4	20:00:00	27
d2	s3	19-aug-2008	CH2	19:30:00	45
d2	s4	19-aug-2008	CH1	17:05:13	71
d3	s5	22-aug-2008	CH1	25:12:17	11
d4	s6	15-sep-2008	CH6	23:47:58	5
d5	s7	16-sep-2008	CH5	19:45:34	15

D: number of days where one spot of the campaign is broadcast, in this example D=5.

S : number of spots, in example, S=7



c. Panel constitution for a specific campaign

To compute the post-evaluation, the algorithm will first define a campaign panel. In the CIM TV study the panel used is a Union panel: all participants of the Audimetric panel on one or more of the campaign days are a member of the panel. In the example above, all members of the Audimetric panel present on the 18th or 19th or 22nd of August or the 15th or 17th of September will be included in the campaign panel.

Earlier (see 2.1.1) the use of the daily weights for each individual panel member was described. However, at the campaign level, independent of the daily weights, a person present all days of a campaign will have a higher importance than a person present only a small number of days. In order to reflect this difference, each person in the campaign panel receives his own "campaign weight".

Let's define:

- $dW(d,m)$: "daily weight" of member m for day d (d is the day of broadcast)
- $cW(m)$: "campaign weight" of the member (a constant for the campaign)

with

- m : one member
- M : the number of members

The example below helps to understand how the campaign weights are computed.

	daily weights of m1	daily weights of m2	daily weights of m3
d1	100	80	70
d2	0(Absent)	70	72
d3	90	0(Absent)	68
d4	95	95	74
d5	105	105	76

The constant weight is computed as the sum of daily weights (0 if absent) divided by D , the total number of days of the campaign

- $cW(m1) = (100+90+95+105)/5 = 78$
- $cW(m2) = (80+70+95+105)/5 = 70$
- $cW(m3) = (70+72+68+74+76)/5 = 72$

d. GRP's for an individual spot

The GRP's published at the spot level are computed with the member daily weights. So we can define the GRP's for spots as:

$$GRP\%_s = \frac{\sum_{m=1}^M c_{(m,s)} * dW_{(m,d)}}{\sum_{m=1}^M dW_{(m,d)}} * 100,0$$



with

- $c(m,s)=1$ (true), if $nS(m,s) \geq \text{ceiling}(l(s)/2)$
- $c(m,s)=0$ (false), if $nS(m,s) < \text{ceiling}(l(s)/2)$

and

- $l(s)$ = the length of a spot s in seconds
- $nS(m,s)$ = the number of seconds of spot s viewed by member m , consecutive or not.

e. GRP's, coverage and OTS for a campaign

The total GRP for a campaign = GRPT%.

The total GRP of the campaign can be defined as the sum of GRP's for the individual spots in a campaign:

$$GRPT\% = \sum_{s=1}^S GRP\%_s$$

Similar to the notion of contact of a member with one spot, we can define the contact of a member with the whole campaign as the sum of contacts with individual spots:

$$cT(m) = \sum_{s=1}^S c(m,s)$$

The total coverage can then be expressed as:

$$COVT\% = \frac{\sum_{m=1}^M v * cW(m)}{\sum_{m=1}^M cW(m)} * 100,0$$

With

- $v=1$ if $cT(m) > 0$ (contact with at least one spot in the campaign),
- $v=0$ if $cT(m) = 0$ (not a single contact with one of the spots in the campaign).

Logically, the average OTS can then be expressed as:

$$\text{Average OTS} = \frac{GRPT\%}{COVT\%}$$

f. Computing the contact distribution for a campaign

Computing the contact distribution for a whole campaign, cannot be based simply on data for individual spots. These data involve daily weights that can differ from day to day per member and don't take into account the difference between members in campaign weight.

It is possible to compute the total GRP based on campaign weights per campaign panel member:

$$cGRPT\% = \frac{\sum_{m=1}^M \sum_{s=1}^S c(m,s) * cW(m)}{\sum_{m=1}^M cW(m)} * 100,0$$



We can now define the % contacts for any given k (k being a number of contacts):

$$COVTk\%(k) = \frac{\sum_{m=1}^M v * cW(m)}{\sum_{m=1}^M cW(m)} * 100,0$$

With

v=1 if cT(m)=k,
v=0 if cT(m) ≠ k.

However, neither the cGRPT% nor the COVTk%(k) may ever be published:

- Given the fact that GRPT% is based on daily weights but cGRPT% is based on campaign weights, often GRPT% will not be equal to cGRPT%.
- Since COVTk%(k) is also based on campaign weights it cannot be published.

One of the priorities of the CIM TV algorithm is to allow the publication of GRP's for individual spots during the campaign without risk for modification of these values afterwards. Therefore, only the GRPT% can be published.

To calculate a publishable contact distribution, a correction algorithm is used that transforms the contact distribution computed with campaign weights in such a manner that it respects following mandatory conditions:

- GRPT% must be unchanged, it is the sum of the GRP% of each spot;
- COVT% defined above must also remain unchanged;
- OTS must evidently remain GRPT%/COVT%.

Since the objective is to establish following formula,

$$GRPT\% = \sum_{k=1}^K COVTk\%(k) * k ,$$

the values of COVTk%(k) will have to be changed to keep the previous equation true while maintaining also the following relation:

$$COVT\% = \sum_{k=1}^K COVTk\%(k)$$

The correction algorithm seeks to establish in five steps for each number of contacts a transformation value α so that:

$$1. \quad GRPT\% = \sum_{k=1}^K (d_k + \alpha_k).k \quad \text{or} \quad \sum_{k=1}^K \alpha_k.k = GRPT\% - cGRPT\% , \text{ and}$$

$$2. \quad COV\% = \sum_{k=1}^K (d_k + \alpha_k) \quad \text{or} \quad \sum_{k=1}^K \alpha_k = 0$$



Step 1.

Knowing that the average $OTS = \frac{GRPT\%}{COVT\%}$, we define $F = \text{int}(\text{averageOTS})$.

This value is used as a pivot value. It allows to compute the % of members (coverage) in the campaign panel present on each side of the pivot value in the contact distribution:

On the lower end:
$$D_m = \sum_{k=1}^F COVTk\%(k)$$

On the higher end:
$$D_M = \sum_{k=F+1}^K COVTk\%(k)$$

Step 2.

β is defined as the coverage for any given OTS level divided by the total coverage on its side of the pivot value, with a negative sign if it falls in the lower end of the contact distribution:

$$\beta_k = -\frac{COVTk\%(k)}{D_m} \quad \text{for} \quad k \leq F$$

$$\beta_k = \frac{COVTk\%(k)}{D_M} \quad \text{for} \quad k > F$$

with
$$\sum_{k=1}^K \beta_k = 0$$

Step 3.

Multiply for each OTS level the β -value with the number of OTS.

A is defined as the sum of these multiplications:
$$A = \sum_{k=1}^K \beta_k \cdot k$$

Step 4.

This allows calculating $\alpha_1, \alpha_2, \dots, \alpha_n$ from the equation $\alpha_k = \frac{GRPT\% - cGRPT\%}{A} \cdot \beta_k$ taking 1) and 2) into account.

Step 5.

Finally, the values of $COVTk\%(k)$ can be adapted for all k as follows:

$$COVTk\%(k) = COVTk\%(k) + \alpha_k$$

Final check: Check once more that coverage and OTS are unchanged and that following formula is true

$$GRPT\% = \sum_{k=1}^K COVTk\%(k) * k$$



Hereunder, you can find an example of a correction by the algorithm.

Campaign evaluation

Total of daily GRP (sum of GRP's/event)	250
Coverage % whole "campaign"	68
Average OTS	3,68

Input data			Intermediary values				Result	
Step 0			Step 1	Step 2	Step 3	Step 4	Step 5	
Number of contacts k	cov%(k)	Campaign GRPs k*cov%(k) (not published)	Pivot value + Split coverage%	Beta(k)	Beta(k)*k	Alpha(k)	Corrected cov%(k)	Corrected GRPS(k)
1	10,00	10,00	campaign GRP = 319,00 F = 3,00 Dm = 38,00 DM = 30,00	-0,26	-0,26	3,30	13,30	13,30
2	8,00	16,00		-0,21	-0,42	2,64	10,64	21,28
3	20,00	60,00		-0,53	-1,58	6,60	26,60	79,80
5	8,00	40,00		0,27	1,33	-3,34	4,66	23,28
6	5,00	30,00		0,17	1,00	-2,09	2,91	17,46
7	1,00	7,00		0,03	0,23	-0,42	0,58	4,07
8	7,00	56,00		0,23	1,87	-2,93	4,07	32,60
9	0,00	0,00		0,00	0,00	0,00	0,00	0,00
10	5,00	50,00		0,17	1,67	-2,09	2,91	29,10
11	0,00	0,00		0,00	0,00	0,00	0,00	0,00
12	3,00	36,00		0,10	1,20	-1,25	1,75	20,96
13	0,00	0,00		0,00	0,00	0,00	0,00	0,00
14	1,00	14,00		0,03	0,47	-0,42	0,58	8,15
Total	68,00	319,00			0,00	5,50		68,00
campaign GRP							COVTO	GRPTO

Double

Recomputed COVTOT	68
Difference with COVTOT should be 0	True
Recomputed GRP TOT	250
Difference with daily GRPTOT should be 0	True

See also excel file "Campaign Evaluation Algorithm"



2.3.2 Adaptations to handle time shift viewing in the post-evaluation algorithm

Time Shifted Viewing can create a slightly different situation:

- $c(m,s)$ was always 0 or 1.
It now becomes the total number of Live and Time Shifted contacts of member m with spot s .
Its value can be 0, 1 or higher.
- If we define
 - LENGTH: the number of seconds of spot s
 - LIMIT : ceiling $(l(s)/2,0)$
 - NS: total number of seconds of this spot seen by member, eventually partly live, partly in TSV

the value of $c(m,s)$ is defined in the following way

- 0 if $NS < LIMIT$
 - 1 if NS between $LIMIT$ and $(LENGTH + LIMIT - 1)$
 - 2 if NS between $(LENGTH + LIMIT)$ and $(2 * LENGTH + LIMIT - 1)$
 - N if NS between $((N-1) * LENGTH + LIMIT)$ and $(N * LENGTH + LIMIT - 1)$
- Another modification is the number of values in the distribution contacts.
With TSV, the distribution contacts can contain more values than the actual number of spots.



2.4 Calculation rules for “Live+Playback”

2.4.1 Basic Principle

Live+Playback is a new “viewer centric” measure. Whereas Live and Live+7 are “broadcast centric” measures. The starting point for Live+Playback is the viewer who watched a certain channel on a specific day independently of the broadcasting day of the programme(s) or time band(s) involved. In other words: both live and time shifted viewing on the specific day are taken into account.

The time of viewing is 1 specific day only. The content of the viewed broadcasts covers a maximum of 7 days (day of viewing and the broadcasts of six days before).

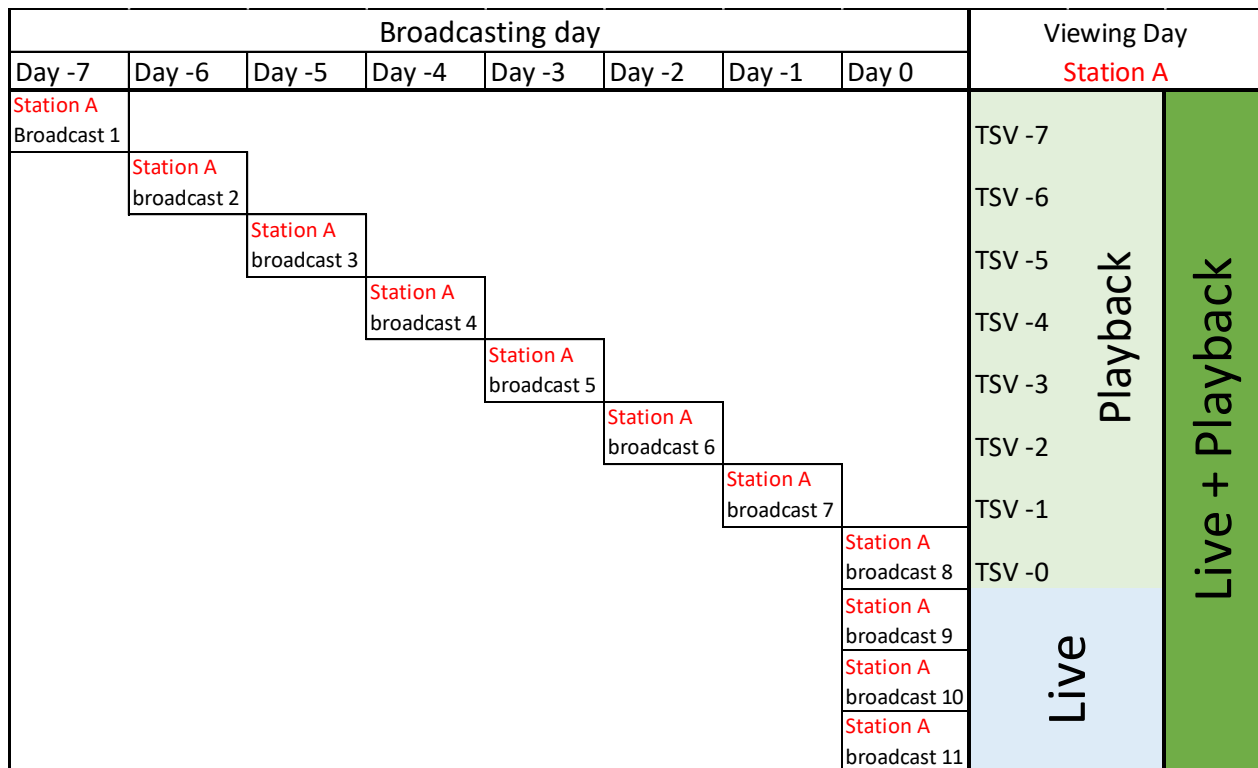
Live+Playback may only be reported for Total TV and up to channel level.

Live+Playback cannot be calculated for programmes because programmes may be broadcasted in the past and the ‘live’ audience is not taken into account.

Live+Playback on one specific day is the total of:

- a/ Live viewing on a that specific day (Live)
- b/ The Time shifted viewing on the actual day of viewing (TSV 0)
- c/ The Time shifted viewing of programmes broadcasted until 7 days before that specific day (TSV -1 until TSV -7).

The total of b/ and c/ is called “Playback”





2.4.2 Rating “Live+Playback” calculation rules

a. One a specific day

The rating on a specific day is defined as the average percentage of viewers per second within the reference universe of this viewing day that watched live or in playback. The respondents in the random sample are weighted with a weight determined by the extent to which they occur in the total population of viewers in the reference universe of the viewing day. All viewers that are present in the universe on the viewing day are taken into account.

$$rating_d = \frac{\sum_{r=1}^R (w_r p_{r,d, live} + w_r p_{r,d, playback})}{\sum_{r=1}^R w_r} \times 100\%$$

Rating_d: rating for one specific day, the viewing day

R: number of respondents in the sample on the viewing day

w_r: weight of respondent *r* on the viewing day

p_{r,d, live}: proportion of the day (*d*) viewed live by respondent *r*

p_{r,d, playback}: proportion of the day (*d*) viewed in playback by respondent *r*

where the proportion is equivalent to:

$$p_{r,d, live} = \frac{V_{r,d}}{\text{duration}_d}$$

V_{r,d}: Viewing duration of respondent *r* for the specific day (*d*)

Duration_d: duration of the day (24h)

$$p_{r,d, playback} = \sum_{TSV0}^{TSV-6} \frac{V_{r,d}}{\text{duration}_d}$$

TSV 0: time shifted viewing on the viewing day

TSV-1: time shifted viewing from content broadcasted 1 day before the viewing day

TSV-2: time shifted viewing from content broadcasted 2 days before the viewing day

...

TSV -7: time shifted viewing from content broadcasted 7 days before the viewing day

Rating can only be calculated for a (number of) Channel(s), namely a channel with TSV data, see station list provided by the CIM.



2.4.3 Reach “Live+Playback” calculation rules

The channel reach for one specific day is defined as the percentage of viewers who watch that channel at least once for a certain time during a specific day, live or in playback.

$$reach_{ch} = \frac{\sum_{r=1}^R w_r d_{r, ch}}{\sum_{r=1}^R w_r} \times 100\%$$

$$d_{r, ch} = \begin{cases} 1 & j_{r, ch} \geq J \\ 0 & j_{r, ch} < J \end{cases}$$

ch : channel

d_{r,ch}: ‘dummy’ that indicates whether respondent falls within the channel rating according to specific definition (viewing threshold)

J: criterion for the specific channel rating (e.g. 60 consecutive seconds)

R: number of respondents in the sample

w_r: weight of respondent *r* (viewing day)

j_{r,ch}: the sum of live and playback viewing, calculated according to the specific conditions, personal criterion of respondent for the channel.

2.4.4 “Live+Playback” share

“Live+Playback” share is calculated by dividing the rating_d of a specific channel by the rating_d of all channels on the specific day.

Both Total TV and Total Screen Usage can be used as a reference within the software application.

$$\text{"live + playback" marketshare}_{ch, d} = \frac{rating_{ch, d}}{rating_{CH, d}}$$

with *ch*=channel, *CH*=all channels, *d*=day



3. Reporting rules

3.1 Live, Live+7 and Live+Playback rating/reach

Given the introduction of Time Shifted Viewing, it has become possible to make different calculations for rating and reach:

- Live rating/reach : viewing during the live broadcast,
- Live+7 rating/reach : viewed during the live broadcast or until 7 days later;
- Live+Playback rating/reach : viewed live and playback (broadcasted until 7 days before the viewing day).

Live and Live+7 rating and reach emit from 1 broadcast and when it is viewed, live or later:

Live + Playback rating and reach proceed from the viewers who, on 1 day, view one channel live or broadcasts from the near past of one channel in playback.

Schematically, the distinction between Live, Live+7 and Live+Playback looks like this.

Broadcasting day								One Specific Day	Viewing day									
Playback									Station A	6								
Day -7	Day -6	Day -5	Day -4	Day -3	Day -2	Day -1	Day 0	Day 0		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7		
Station A broadcast 1								TSV -7										
	Station A broadcast 2							TSV -6										
		Station A broadcast 3						TSV -5										
			Station A broadcast 4					TSV -4										
				Station A broadcast 5				TSV -3										
					Station A broadcast 6			TSV -2										
						Station A broadcast 7		TSV -1										
							Station A broadcast 8	TSV -0										
								Live	Station A broadcast 9	Station A broadcast 12	Station A TSV of 12	Station A TSV of 9						
								Live	Station A broadcast 10	Station A broadcast 13		Station A TSV of 3		Station A TSV of 8				
								Live	Station A broadcast 11	Station A broadcast 14			Station A TSV of 7		Station A TSV of 10	Station A TSV of 5		
									Live	Live	TSV 0	TSV 1	TSV 2	TSV 3	TSV 4	TSV 5	TSV 6	TSV 7



3.2 Live, Live+7 and Live+Playback

The calculation of the share of a broadcast or time band in total viewing becomes more difficult, due to the introduction of Time Shifted Viewing. Depending on the jumping-off point, both the viewing volume of a broadcast and the total viewing volume can be defined differently.

The software applications must enable two different bases for analysis of the data:

- The broadcast: the content as it is broadcast live on day X.
- The viewer: the period when a viewer watches content, live on day 0 or time shifted.

The term 'content' broadly encompasses all types of broadcasts here: programmes, programme components, spots, etc.

The CIM has decided that for 'content' only 3 results may be published:

- Live share (based on a broadcast)
- Live+6 share (based on a broadcast between 01/01/2010 and 31/12/2015)
- Live+7 share (based on a broadcast since 01/01/2016).

And for only time combined with channel:

- Live+Playback share (based on the viewer).

Any other analysis may only be used for internal purposes.

3.2.1 Live share

Until the introduction of data regarding Time Shifted Viewing, the market share was calculated as the percentage of viewers who watched a broadcast (live by definition) or time band, divided by the total viewing audience (see 2.1.4 above).

This notion remains in existence by the name 'Live share'.

3.2.2 Live+6 share

By measuring Time Shifted Viewing, it became obviously interesting to add up the sum of live and time shifted viewing (on the day itself until six days later) for a broadcast and to compare it with the broadcasts on other channels with the same start and end time.

This variable is called 'Live+6 share' and may only be reported for the period 01/01/2010 - 31/12/2015



3.2.3 Live+7 share

The variable, 'Live+7 share' has the same characteristics as Live+6 share but include one additional day of time shifted viewing. All reporting of programmes, broadcast schedules, as well as spots, blocks of advertising and time bands that were broadcasted since 1st of January 2016, should be done using this variable.

Example:

The programme 'Thuis' was broadcast on 01/02/2016 and was viewed on that day as well as later. This programme was then (re)watched later and distributed up to 7 days after broadcast. Until 08/02/2016, time shifted viewing of 'Thuis' was allocated to 01/02/2016.

The 'Live share' of Thuis corresponds with the market share as was used until the introduction of TSV: the percentage of viewers of 'Thuis' in relation to the total 'live' viewing audience.

The 'Live+7 share' is the percentage of viewers of 'Thuis' in relation to the total viewing audience. The total viewing audience are the viewers of Thuis and all time slots of broadcasts that were programmed parallel on 1/9/2008 (from 9:15 pm – 10:05 pm) and that were viewed both live (on 01/02/2016) and time-shifted (01/02/2016 (VOSDAL)-08/02/2016).

This type of reporting can also be applied to a channel's broadcast schedule.

For example: RTL-TVI between 8 pm and 10:30 pm on 01/02/2016.

All viewers (both live and time shifted until and including 08/02/2016) of the programmes within this time span on Canvas and the programmes on the channels that are programmed parallel belong to the total Live+7 viewing audience.

This idea applies to programmes, broadcast schedules, as well as spots, blocks of advertising and time bands.

3.2.4 Live+Playback share

The starting point here is the viewer who watched a certain channel on a specific day, separate from the fact of whether the broadcast was followed live or dated from an earlier time (until six days ago).

The time of viewing is thus one specific day only. The content of the viewed broadcasts covers a maximum of 8 days (day of viewing until and including seven days before).

The share of a channel is defined here as the 'Live+Playback share'.

To keep the user from becoming lost in all possible combinations of viewing times and programmes, time bands, spots and so on, reach, rating and share may only be reported for Total TV and up to channel level.

3.2.5 "+7" and "Playback"

In the CIM TV study, time shifted viewing is identified as TSV up until 7 days after broadcast (Day 0 to Day 7 inclusive). The total of this TSV is called "+7"



The total of the time shifted viewing on the actual day of viewing (TSV 0) and the time shifted viewing of programmes broadcasted until 7 days before that specific day (TSV -1 until TSV - 7) is called "Playback".

3.2.6 Monthly figures including Time Shifted Viewing

Calculations of reach and rating for a month may only be reported on the basis of a channel.

In a month of 30 days, the figures must be calculated based on what was watched from day 1 to 30, inclusive.

So this is not about the programming of those days that can also be viewed seven days after the month has ended.

3.2.7 Campaign evaluation

Since the currency is 'Live+7+guests', the balance of advertising campaigns may only be published on the basis of Live+7+guests.

In practical terms, this means:

- Day 1 is the day of the broadcast of spot 1,
- The last campaign day is the day of broadcast of the last spot + 7 days.



3.3 Source citation

Every report without exception must state the conditions or parameters that resulted in the specific reported channel reach.

As indicated above, CIM TV considers 'Live+7+guests' as the currency. Every document and presentation must state the source of the data: 'Source: CIM TV' as well as the target group, hour slot and all additional parameters that determined the universe of the analysis. Also the company who generated the data needs to be mentioned.

The fact that a channel has a detailed listing in AUB, has a monthly broadcasting report or just per quarter must be considered.

If it does not involve complete data, this must be clearly indicated:

- If Live only: 'Source: CIM TV – Incomplete figures, only live viewing'
- If Time Shifted only: 'Source: CIM TV – Incomplete figures, only time shifted viewing'

3.4 Rounding

The CIM recommends rounding to one (1) digit after the decimal point for final reporting. An exception is the export of data, in databases or in other software, where new calculations can be made. Greater precision remains necessary there (at least 4 digits after the decimal point).



4. Available files

An Excel file with a detailed description of ATA-ATB and TSV files is available upon request at CIM: 02/661 31 53 or tv@cim.be.

<http://www.cim.be/nl/televisie/methodologie>

<http://www.cim.be/fr/television/methodologie>

Field 10 TSV is added to the TSV part in the ATA and ATB file.

Field	Description	Start.pos	End.pos	Length
9	Source code	44	45	2
10	Time Shifted Viewing	46	46	1

4.2.2 TSV file

The TSV file includes the recording time and the re-viewing time.

The following variables are included in the file:

- Recording date
- Family number
- Channel code
- Time of broadcast
- Viewing duration
- Date of re-viewing
- Time of re-viewing
- Source code

4.3 Top 20 and Top 100

A daily and weekly Top 20 of the most watched TV programmes in the North and the South is available in the public section on the CIM website:

The day top 20 contains the rating of the best viewed programmes for a week. Data are published on the Live+VOSDAL+Guest currency and are available the day after at 14h30.

The week top 20 contains the rating and market share of the best viewed programmes for a week. Data are published on the TSV+7+Guest currency and are therefore available 8 days after the weeks end.

The annual Top 100 with the 100 most viewed programs is also available based on the TSV+7+Guest currency. It is available by the end of January of each year.