
Media Math

Universe Estimate (U.E.)

Total persons or homes in a given population.

Formula (s)

U.E. = Impressions (OOO)/Rating %

= 29,999 (OOO)/26.2% = 114,500 (OOO)

Average Audience (AA)

“AA” reflects viewing for an average minute to a program and is an average of the audience at minute 1,2,3, etc...

Can be expressed as a rating % or projected audience (000).

Average Audience Rating %

The estimate size of the television audience relative to the total universe, expressed as a percentage. The percent of all TV households or persons tuned to a specific station.

Formula (s)

Rating % = Share % X HUT %

$$= 43.2\% \times 61.2\% = 43.2 \times 61.2 / 100 = 26.4\%$$

Rating % = AA Projection (OOO) / UE (OOO)

$$= (2,775,000 / 114,500,000) \times 100 = 2.42\%$$

Rating % = GRP's % / # Spots

$$= 288 / 15 = 19.2\%$$

Note:

When we say 10 Rtg; mathematically we mean 10% or .1

Cannot add ratings of different denominators together; cannot add M18-49 + F18-49 to get A18-49.

Average Audience Projection (OOO)

A rating expressed in numeric rather than percent form.

Formula (s)

Projection (OOO) = Rating % x Universe (OOO)

$$= 2.63\% \times 114,500,000 = 2.63 \times 114,500,000 / 100 = 3,011,350$$

Projection (OOO) = VPVH x HH Projections (OOO)

$$= .308 \text{ M25-54} \times 72,049,000 \text{ HH Projections} = 22,191,092$$

Note:

Can add impressions together across demos, dayparts or stations/sources; can add M18-49 + F18-49 to get A18-49.

Coverage

The percentage of homes or persons able to receive an individual network or channel.

Formula (s)

$$\begin{aligned}\text{Coverage Rating \%} &= \text{Coverage Projection (OOO)} / \text{Coverage UE (OOO)} \\ &= (2,775,000 / 98,100,000) \times 100 = 2.82\end{aligned}$$

Households Using Television (HUT)

Total viewing to all television.

Formula (s)

HUT % = HH Rating% / Share%

$$= (26.2\% / 43.2\%) = (26.2 / 43.2) \times 100 = 60.6$$

HUT % = # HH with TV sets on (OOO) / Total HH Universe (OOO)

$$= (64,596,000 / 105,500,000) \times 100 = 61.2\%$$

Note:

The sum of the average ratings for a given time-period may be higher than the HUT because of viewing in multiple set TV households. If a household is watching two programs, it is counted toward each program rating, but only once toward HUT.

Persons Using Television (PUT)

The percentage of all persons within a given demographic category in the survey area who are viewing television during a specific period of time.

Formula (s)

$$\begin{aligned} \text{PUT \%} &= \text{Demo Ratings \%} / \text{Demo Share \%} \\ &= 26\% / 43\% = (26 / 43) \times 100 = 60.5\% \end{aligned}$$

$$\begin{aligned} \text{PUT \%} &= \# \text{ Persons with TV sets on (OOO)} / \text{Total Persons Universe (OOO)} \\ &= (64,596,000 / 98,500,000) \times 100 = 65.6\% \end{aligned}$$

Share (Of Audience)

The percent of households using television (HUT), which are tuned to a specific program at a specified time.

Formula (s)

Share % = Rating % / HUT %

$$= 26.2\% / 61.2\% = .262 / .612 \times 100 = 42.8$$

Note:

Difference between share and rating is that share is a percentage of HUT whereas rating is a percentage of the total universe. Essentially, the TV set must be on for share whereas for rating the TV set may be on or off.

Gross Rating Points (GRPs)

The sum of all ratings for all programs in an advertising schedule. One ratings point equals one percent of total audience (universe).

Formula (s)

$$\begin{aligned}\text{GRPs} &= \text{Impressions (000)} / \text{Universe Estimates} \\ &= (2,775,000/105,500,000) \times 100 = 2.63\end{aligned}$$

$$\begin{aligned}\text{GRPs} &= \text{Rating (\%)} \times \# \text{ Spots} \\ &= (26.3\% \times 20) = (.263 \times 20) \times 100 = 526\end{aligned}$$

$$\begin{aligned}\text{GRPs} &= \text{Reach (\%)} \times \text{Frequency} \\ &= (26.3 \times 3) = 78.9\end{aligned}$$

Gross Impressions

The total number of households, or persons exposed to an advertising schedule.

Formula (s)

$$\begin{aligned}\text{Gross Impressions} &= \text{GRPs \%} \times \text{Universe (OOO)} \\ &= (58 \times 105,500,000) / 100 = 61,190,000\end{aligned}$$

Viewers Per Viewing Household (VPVH)

The number of viewing persons per tuning household. Usually reported as “per 1,000 viewing households.”

Formula (s)

$VPVH = \text{Persons Projection (OOO)} / \text{HH Projection (OOO)}$

$= 22,191 \text{ M25-54 (OOO)} / 72,049 \text{ HH (OOO)} = .308 \text{ M25-54 VPVH}$

Cost Per Point (CPP)

The cost to deliver a single rating point (1% of the defined population).

Formula (s)

CPP = Average Unit Cost / Rating %

$$= \$110 / 8 = \$13.75$$

CPP = Total Schedule Cost/ GRP's %

$$= \$100,000 / 56 = \$1,786$$

Cost Per Thousand (CPM)

The cost to deliver 1,000 people or homes. The figure is obtained by dividing the cost of an ad by the size of the audience in thousands.

Formula (s)

$$\text{CPM} = \text{Media Cost} / \text{Gross Impressions (OOO)}$$

$$= \$1.5 \text{ Million} / 85,000 = \$17.6$$

$$\text{CPM} = \text{Average Unit Cost} / \text{AA (OOO)}$$

$$= (\$110 / 85,000) \times 1000 = \$1.28$$

Reach

The number of different homes/people exposed at least once to program or commercial across a stated period of time. Also called the cumulative or unduplicated audience.

The homes/people exposed two or more times are only counted once. The maximum reach, therefore, is 100% of TV households or persons.

Formula (s)

$$\begin{aligned}\text{Reach} &= \text{GRPs \%} / \text{Frequency} \\ &= 300 / 5.0 = 60\%\end{aligned}$$

Frequency

Refers to the average number of times households or persons viewed a given program, channel, or advertisement during a specific time period.

Formula (s)

$$\begin{aligned}\text{Frequency} &= \text{GRPs \%} / \text{Reach \%} \\ &= 30 / 20 = 1.5 \text{ exposures}\end{aligned}$$

Frequency Distribution

An array of reach according to the level of frequency delivered to each group.

Average Hours Of Viewing

HUT/PUT converted to the average hours of viewing per home or per person.

Formula (s)

Avg. Hours = Duration of period X HUT%

If we assume M-Su 7-11pm duration is 7 days x 4 hours = 28 hours. And if we assume a 70% HUT...

$$= 28 \text{ hours} \times .70 = (28 \text{ hours} \times 70) / 100 = 19.6 \text{ hours/week}$$

Average hours:min would be...

$$19 + (.6 \times 60 \text{ min}) = 19 \text{ hours } 36 \text{ minutes}$$

Calculating Nationalized Cable Rating from Cable Universe Rating

In order to calculate a national cable rating from cable universe rating – must calculate impressions since impressions are constant.

If FX has a .8 HH cable rating and we know the FX coverage UE is 65,070,000...

First...

calculate coverage impressions

$\text{cvg rtg\%} = \text{cvg impressions (OOO)} / \text{cvg UE}$

$\text{cvg rtg\%} \times \text{cvg UE} = \text{cvg impressions}$

$.8 \times 65,070,000 = 52,056,000$

Second...

Impressions are constant and national UE is 114,500,000

$\text{rtg\%} = \text{impressions (OOO)} / \text{UE (OOO)}$

$\text{rtg\%} = 52,056,000 / 114,500,000$



Nielsen Measurement

Nielsen NPM Measurement

- Random sample of U.S. TV homes
- Current sample size = 12,900 TV homes (gross installed count) which represents approximately 20,000 people
- Homes remain in sample a maximum of 2 years
- Incentives to recruit sample and keep respondents participating. Special incentives are used for lower cooperating population segments (ethnic).
- People Meter is installed on all TV sets, VCR's, cable boxes, satellite dishes.
- Based on an average-minute audience computation.
- Nielsen has monitoring sites which collect which program airs. These monitoring sites connect to a central "black box" which calls in info to a central computer.

Nielsen Local Measurement

Diary Only

- Used for smallest markets
- Recruitment based on addresses (address based sampling).
- One diary for each TV Set in HH
- HH keeps diary for 1-week out of each sweep (4 week measurement period).
- Measured during sweep months only (# of sweeps varies by market size).
- Records viewing by ¼ hour (audience computed on average ¼ hour)
- HH with DVRs receive an 8 Day diary to include playback (Note: majority of playback occurs within same day)

HH Set Meter

- Markets 26-56
- Sample of 300-500 HHs in each market depending on size of market
- HH Meter is passive measurement, measuring set status (set on/off) and program codes/signatures for tuning
- All sets, VCR's and Video Games are measured
- Viewing monitored minute by minute (audience computed on average ¼ hour)

Nielsen Local Measurement

HH Meter/ Diary integration (plan to discontinue by 12/31/12)

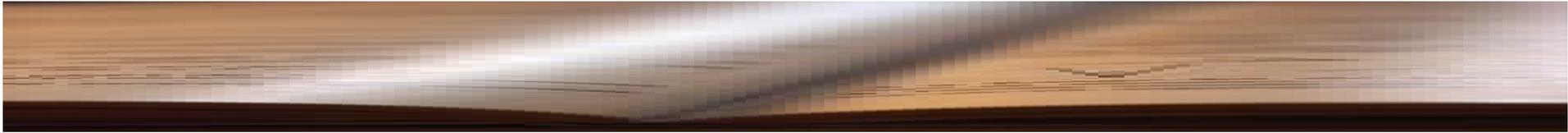
- “Who” is watching is collected via the diary sample and then combined with the HH meter data (“how many are watching”). ViP – Viewers in Profile ratings book combines Meter HH data w/ Diary persons data.
- HH meter impressions X diary demo VPVH = Viewing audience

Local People meter (LPM)

- Top 25 – LPM
- Sample of 600-800 HHs dependent on size of market
- Meter captures set status: on/off, channel selected, viewer status (age/gender)
- All sets, VCR's and video games are measured
- Viewing monitored minute by minute (audience computed on average ¼ hour)

Time-Shifting – A/P Meter

- Measures viewing in a digital / DVR homes. Nielsen started measuring 12/26/05.
- Playback credited to time of viewing
- Home must be in-tab on both day of record and playback to be included.
- Installed on all sets in Household
- 36% of TV HHs have a DVR (as of 8/10)
- Approximately 63% of playback occurs within 24 hours.
- Diary measurement – started 5/05 with an 8-day diary sent to HHs.



Some Terminology

Market Section Definitions

Cable Status - based on a HHs ability to receive cable network services. This can be via a wire or alternate delivery source such as C-Band satellite Dish, DBS, Wireless Cable, etc...

Cable Plus - HHs receiving one or more cable network services defined above.

Cable Plus Pay - HHs that receive one or more cable network services and also receive one or more pay channels for which the service provider normally charges a premium (i.e. HBO).

Broadcast Only - HHs that can receive programming over the air only.

Viewing Sources Definitions

Broadcast Networks - tuning to any ABC, CBS, NBC, Fox, ION, UNI, TEL, TF, MNT or CW broadcast network affiliated station.

Other Broadcast - tuning to a broadcast station identified as Independent from any of the above listed broadcast networks. Independent broadcast networks include Emerging networks such as Azteca America.

PBS - tuning to all station affiliated with the Public Broadcasting Service.

Premium Pay - tuning to premium pay cable services (Encore, HBO, Multimax, Showtime and Starz).

Ad-Supported Cable - tuning to all advertiser supported cable networks. Stations transmitting via cable or ADS. Includes TBS and WGN.

All Other Cable - tuning to those cable networks that are neither ad-supported nor premium pay. Includes pay per view, interactive channels, home shopping channels and audio only feeds but excludes Disney Channel.

All Other Tuning - effective with installation of the A/P meter in 7/05, reports tuning to a distributor that could not be identified due to a lack of encoding and/or monitoring.

Local Terminology

DMA

Designated Market Area. DMAs are a way of designating particular geographic markets and are often ranked by the size of population.

Interconnect

A large group of cable systems within a DMA that are “connected” together. Interconnect gives advertisers the option to reach all cable households within a given market with one buy, one contact and one tape.

Head-end(s)

The physical location(s) from which a cable system process signals and broadcasts.



Demographic Derivations

Demographic Derivations

To Derive	Computation
2-5	2-11 minus 6-11
35-49	18-49 minus 18-34
25+	25-54 plus 55+
35+	18+ minus 18-34
50+	18+ minus 18-49
65+	18+ minus 18-64
50-64	35-64 minus 35-49
18-64	18-34 plus 35-64
25-64	25-54 plus 55-64
18-24	18+ minus (25-54 plus 55+)

Demographic Derivations

To Derive	Computation
25-34	18-34 minus 18-24
50-54	(18+ minus 18-49) minus 55+
55-64	55+ minus 65+
25-49	18-49 minus 18-24
35-54	(18+ minus 18-34) minus 55+
12-24	12-17 plus 18-24
18-54	18-24 plus 25-54

Commonly Used Abbreviations

NTI (BROADCAST)	NIELSEN TELEVISION INDEX
NSI (SYNDICATION)	NIELSEN SYNDICATION INDEX
NHI (CABLE)	NIELSEN HOME VIDEO INDEX
NHTI (HISPANIC TV)	NIELSEN HISPANIC TELEVISION INDEX
ADS	ALTERNATE DELIVERY SOURCE
DBS	DIRECT BROADCAST SATELLITE
DMA	DESIGNATED MARKET AREA
MSO	MUTLI SYSTEMS OPERATOR
SMATV	SATELLITE MASTER ANTENNA TELEVISION
AOT	ALL OTHER TUNING