



Averaging Options

This document covers descriptions, calculations and examples of each of the four averaging options which Arianna currently provides.

Averaging Types

Unweighted Average

This is an arithmetic average that sums the rows in the report and divides by the number of rows.

Weighted Average (UE & Duration)

This is the most commonly used option.

Averages take the length of program/time period and market size (UE) into account.

Weighted Average (UE)

Averages give extra weight to larger markets, but duration is not taken into consideration.

Weighted Average (Duration)

Averages give extra weight to longer programs/time periods, but market size is not taken into consideration.

Examples

Below are the individual market ratings for three programs – one in New York, and two in Ft. Myers.

Market	Stns/Cbl Nts	Title	Date	Start	End	(Imp)	UE	Rating
New York	7 WAAA ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	244964	7515330	3.26%
Ft. Myers-Naples	26 WDDD ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	7063	499410	1.41%
Ft. Myers-Naples	26 WDDD ZZZ	NOON SHOW	4/13/2011	12:00 p	12:30 p	13305	499410	2.66%

All values are calculated using six decimal places. The data grid below shows the expanded values for the Rating variable.

Market	Stns/Cbl Nts	Title	Date	Start	End	(Imp)	UE	Rating
New York	7 WAAA ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	244964	7515330	3.259524%
Ft. Myers-Naples	26 WDDD ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	7063	499410	1.414269%
Ft. Myers-Naples	26 WDDD ZZZ	NOON SHOW	4/13/2011	12:00 p	12:30 p	13305	499410	2.664144%

If the user elects to see a summary average across all three rows, they will be calculated as follows:

Unweighted Average Rating

$$\text{Rating} = (\text{rating}^1) + (\text{rating}^2) + (\text{rating}^3) / \text{number of rows}$$

$$= (3.259524 + 1.414269 + 2.664144) / 3$$

$$= 2.445979\%$$

$$= \mathbf{2.45\%}$$

This is just a simple arithmetic average across the rows.

For assistance, please call the Nielsen Solutions Center at 1-800-423-4511.

Averaging Options

Weighted Average (UE & Duration)

In order to illustrate this calculation, we've added a duration column showing the number of quarter-hours for each program. The calculation requires us to multiply each program's impressions and universe estimate (UE) by duration. We've added columns to illustrate those components.

Market	Stns/Cbl Nts	Title	Date	Start	End	(Imp)	UE	Rating	Duration	Imp*Dur	UE*Dur
New York	7 WAAA ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	244964	7515330	3.259524%	8	1959712	60122640
Ft. Myers-Naples	26 WDDD ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	7063	499410	1.414269%	8	56504	3995280
Ft. Myers-Naples	26 WDDD ZZZ	NOON SHOW	4/13/2011	12:00 p	12:30 p	13305	499410	2.664144%	2	26610	998820

$$\begin{aligned} \text{Rating} &= \frac{\{(\text{market}^1 \text{ impression} * \text{duration}^1) + (\text{market}^2 \text{ impression} * \text{duration}^2) + (\text{market}^x \text{ impression} * \text{duration}^x)\}}{\{(\text{market}^1 \text{ UE} * \text{duration}^1) + (\text{market}^2 \text{ UE} * \text{duration}^2) + (\text{market}^x \text{ UE} * \text{duration}^x)\}} * 100 \\ &= (1959712 + 56504 + 26610) / (60122640 + 3995280 + 998820) * 100 \\ &= 2042826 / 65116740 * 100 \\ &= \mathbf{3.14\%} \end{aligned}$$

In this case, the overall average exceeds the arithmetic numbers, since the New York market is given more weight than Ft. Myers. In addition, AM Show is given more weight than Noon Show, since the duration is longer.

Weighted Average (UE)

$$\begin{aligned} \text{Rating} &= \frac{\{(\text{market}^1 \text{ impression}) + (\text{market}^2 \text{ impression}) + (\text{market}^x \text{ impression})\}}{\{(\text{market}^1 \text{ UE}) + (\text{market}^2 \text{ UE}) + (\text{market}^x \text{ UE})\}} * 100 \\ &= (244964 + 7063 + 13305) / (7515330 + 499410 + 499410) * 100 \\ &= (265332 / 8514150) * 100 \\ &= \mathbf{3.12\%} \end{aligned}$$

In this case, the overall average exceeds the arithmetic numbers, since New York is given more weight than Ft. Myers. The values are a little lower than the calculation that considers UE and duration, since the length of AM Show versus Noon Show is not taken into consideration.

Weighted Average (Duration)

In order to illustrate this calculation, we've added columns showing the Rating * Duration for each row in the report.

Market	Stns/Cbl Nts	Title	Date	Start	End	(Imp)	UE	Rating	Dur	Imp*Dur	UE*Dur	Rtg*Dur
New York	7 WAAA ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	244964	7515330	3.259524%	8	1959712	60122640	0.260761
Ft. Myers-Naples	26 WDDD ZZZ	AM SHOW-ZZZ	4/13/2011	7:00 a	9:00 a	7063	499410	1.414269%	8	56504	3995280	0.113141
Ft. Myers-Naples	26 WDDD ZZZ	NOON SHOW	4/13/2011	12:00 p	12:30 p	13305	499410	2.664144%	2	26610	998820	0.053282

$$\begin{aligned} \text{Rating} &= \frac{\{(\text{market}^1 \text{ rating} * \text{duration}^1) + (\text{market}^2 \text{ rating} * \text{duration}^2) + (\text{market}^x \text{ rating} * \text{duration}^x)\}}{\{(\text{market}^1 \text{ duration}^1) + (\text{market}^2 \text{ duration}^2) + (\text{market}^x \text{ duration}^x)\}} \\ &= (0.260761 + 0.113141 + 0.053282) / 8 + 8 + 2 \\ &= 0.427184 / 18 \\ &= \mathbf{2.37\%} \end{aligned}$$

In this example, AM Show is given more weight than Noon Show due to its length, but New York is given no additional weight over Ft. Myers.