Understanding and Using Radio Audience Estimates

A Quick Reference Guide

ARBITRON RADIO

For a Better Understanding of Radio Audience Estimates...

. . . we have prepared this quick reference guide which we believe will be helpful to both the new and the experienced users of radio. We have attempted to strip away some of the mysteries of what audience estimates mean, how they are calculated, and how they can be used.

If you think you know everything there is to know about Radio Audience Estimates, turn to the brief quiz at the end of this book. If you can answer all of the questions correctly, please give this copy to a friend who cannot.

Arbitron Radio
March 1976

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Introduction

This report is divided into four sections:

1. **Quick Reference Guide to Frequently Used Radio Audience Estimates**
   This section shows how to calculate frequently used audience estimates.

2. **The Kinds of Estimates Found in Arbitron Radio Reports**
   This section provides a more detailed discussion of audience estimates with comments on how the estimates are used and their value. The discussion about the "Do's and Don'ts" should be of particular interest to readers who sometimes wonder what can and cannot be done with audience estimates.

3. **How to Use Radio Audience Estimates**
   This section suggests a variety of ways to use radio estimates and evaluate station performance. You should be aware that many companies have developed ways of using radio audience estimates that may not be covered in the examples shown in this section.

4. **Test Your Knowledge About Radio Audience Research**
   One way to discover how much you know about radio audience estimates is to ask yourself some questions. We have done this for you. We have also provided the answers!

Section I

A Quick Reference Guide to Frequently Used Radio Audience Estimates

Ratings

To calculate a rating you need two numbers:

Population

and

Listeners

$$\frac{\text{Listeners}}{\text{Population}} = \text{Rating (\%)}$$

Example

Population = 150,000
Listeners = 30,000

$$\text{Rating} = \frac{30{,}000}{150{,}000} = 20\%$$

20% of Population Was Listening

Ratings usually are based on the population in the Metro Survey Area or the ADI.

Two Kinds of Ratings

1. Average Quarter-Hour Ratings Tell You . . . What *percent* of the metro population was listening during an average quarter-hour in a given time period.
2. Cume Ratings Tell You . . .
   What *percent* of the metro population listened at least once during the time period.

Gross Rating Points (GRP's)

To calculate GRP's, you need two numbers:

An Average Rating For a Time Period

Number of Spots to Be Run on Station in the Time Period

Average Rating × Number of Spots = Gross Rating Points

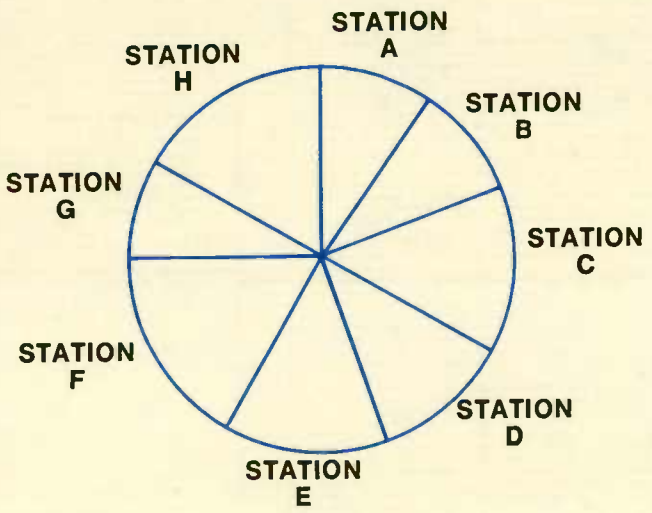
Example

Only *Average Ratings* are used to arrive at Gross Rating Points. GRP's tell you the number of rating points sold or purchased.

Average Quarter-Hour Rating × Number of Spots = GRP's

Day-Part	Number of Spots		Station Rating		GRP'S
M-F, 6AM-10AM	4	×	2.5	=	10.0
M-F, 10AM-3PM	6	×	3.7	=	22.2
M-F, 3PM-7PM	3	×	3.0	=	9.0
SAT, 10AM-3PM	1	×	3.8	=	3.8
SUN, 10AM-3PM	1	×	4.3	=	4.3
Total	15				49.3

Share of Audience Means Cutting Up the Pie Among Stations



Share is the average number of persons who listened to a station during a given quarter-hour expressed as a percent of all persons who listened to radio during the time period.

Share

To calculate share you need two numbers:

Total Listening Audience (Average Persons)

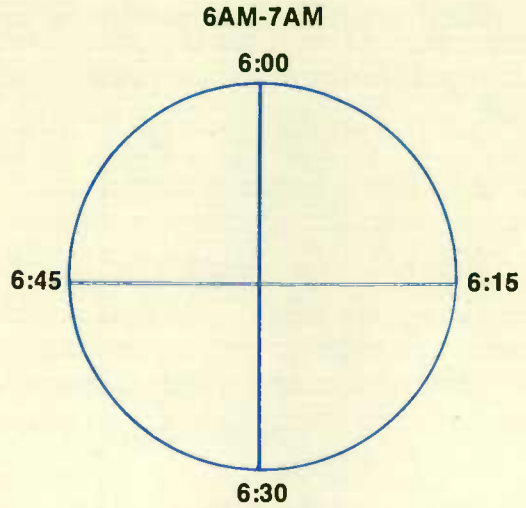
Listeners to Each Station (Average Persons)

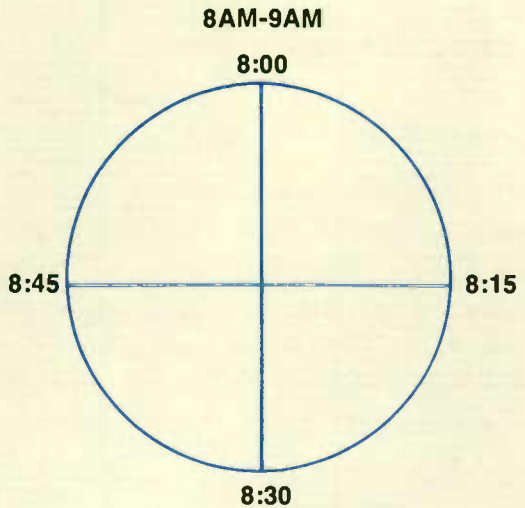
$$\frac{\text{Average Persons to Station WWTM}}{\text{Metro Total Average Persons}} = \text{WWTM's Share}$$

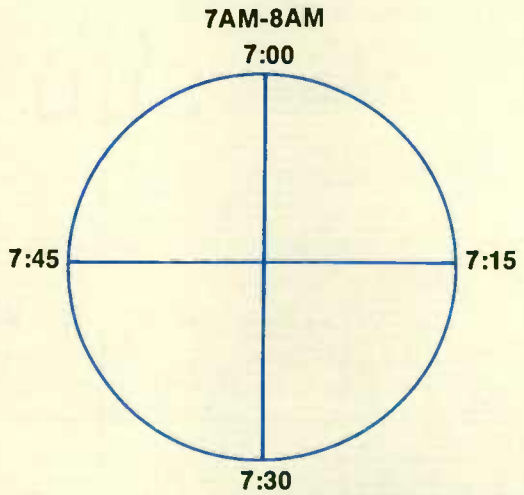
Example

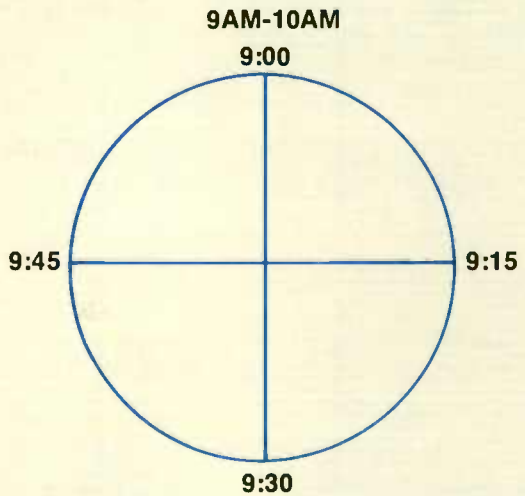
1. Metro Total Average Persons = 75,000
2. WWTM's Average Persons = 7,500
3. WWTM's Share = 10%

Average Quarter-Hour Persons and Cume Persons









One person listened to WWTM in six out of 16 possible quarter-hours. If this person had a diary value of 500, WWTM's Average Quarter-Hour Persons would be (500 × 6) ÷ 16 = 188 persons. Cume Persons = 500 (because you only count WWTM listeners once).

Section II

The Kinds of Estimates Found in Arbitron Radio Reports

You do not have to be a statistician or a researcher to know and understand what audience estimates mean. It is really easy. There are only three basic kinds of audience estimates shown in the Arbitron Radio Report: *Average Quarter-Hour, Cume,* and *Exclusive Cume.*

These three kinds of estimates may be expressed in terms of the *number* of persons listening, the *percent* of the metro population listening, or the *percent* of the total listening audience that is listening to a given station as indicated below.

Average Quarter-Hour Estimates	Cume Estimates	Exclusive Cume Estimates
Average Persons (00)	Cume Persons (00)	Exclusive Cume Persons
Average Ratings (%)	Cume Ratings (%)	
Metro Share (%)	Metro Totals	
Metro Totals		

The discussion below tells you what these three kinds of estimates mean to report users and gives you some examples of how they are used.

Average Quarter-Hour Estimates

Average quarter-hour estimates are expressed in terms of *Average Persons, Average Ratings* and *Metro Shares.* Each of these is discussed below.

Average Persons tell you the estimated *number* of persons listening to a station during *any* quarter hour in a time period. For example, if the Average Persons estimate for station WWTM for Monday-Friday, 6AM-10AM is 9,000 persons, this means the estimated average number of persons listening to WWTM in *any* quarter-hour beginning with 6AM-6:15AM and ending with 9:45AM-10AM is 9,000 persons.

If an advertiser placed only one spot on WWTM in a random quarter-hour during the 6AM-10AM time period, the average audience to that one spot would be 9,000 persons.

The value of an Average Persons estimate is that it provides a figure to work with in determining the estimated audience and cost of a spot schedule rotating within a time period. For example, if the Average Persons estimate, Monday-Friday, 6AM-10AM, is 9,000 then a spot plan with 12 commercials rotating between 6AM and 10AM will generate 108,000 "gross impressions" (Average Persons x Number of Spots = Gross Impressions).

When you divide the cost of a spot schedule by the number of gross impressions, you get cost-per-thousand.

The formula for determining cost-per-thousand (CPM) is shown below:

$$\text{CPM} = \frac{\text{Cost (+000)}}{\text{Gross Impressions}}$$

Using the example above, if each spot cost $18.00, then the total cost of the schedule would be 12 spots x $18 or $216. The CPM for the schedule would be $2.00 ($216,000 ÷ 108,000).

Average Ratings express the number of listeners (Average Persons) as a *percentage* of the metro population. The Average Rating is found by dividing the number of Average Persons by the metro population for the same sex-age group. For example, if the Average Persons estimate for WWTM is 9,000 for Men 18-49, and the metro population for Men 18-49 is 175,600, then the Average Rating for WWTM is 5.1% (9,000 ÷ 175,600). Average Ratings always are expressed in terms of percentages.

One of the values of an Average Rating is that it provides

a figure to work with to determine Gross Rating Points (GRP's). To determine GRP's, multiply the Average Rating by the number of spot announcements. For example, if the Average Rating is 5.1% and the spot schedule on WWTM contains 12 spots, the schedule will produce 61.2 rating points (61.2 GRP's).

Metro Share is the percent of the total metro listening audience that listened to each station. In business, "market share" is used as a benchmark to express what percent of the total industry sales dollars a company has for itself. Station Metro Shares are used in a similar fashion. They tell you for each station what percent it has of the total listening audience in the metro.

For example, if we find the total number of Men 18-49 listening to radio in the metro was 40,300 during the period Monday-Friday, 6 AM-10 AM, then the share of WWTM, which had an Average Persons audience of 9,000, would be 22.3% (9,000 ÷ 40,300).

Many people confuse a "rating" with a "share" estimate since both are shown as percentages. Remember, a rating always relates to total population (e.g., Census data) whereas audience share always is expressed in terms of the total listening activity taking place during a particular time period.

The value in Metro Shares is that they are unaffected by the total amount of listening being done in the metro and, thus, can be evaluated without regard to the total listening levels (i.e. Metro Total Average Persons).

For example, if a station has a 15% share in the morning and a 20% share at night it means the station is doing a better job in relationship to other stations at night than in the morning, even though there may be more total people listening to radio in the morning than at night. Metro Share depends upon how much of the total listening activity a station has for itself.

Metro Shares do not tell you anything about the absolute size of the station's audience. A 15% share in the morning may actually represent a greater *number* of listeners than a 20% share at night. This is illustrated in the example below:

1. **Metro population = 100,000**

	Metro Total Avg. Rtg.	x Population	= Total Listeners to All Stations
2. Morning	25%	100,000	25,000
Night	15%	100,000	15,000

3. **15% Share x 25,000 = 3,750 persons (morning)**
   20% Share x 15,000 = 3,000 persons (night)

The example shows that while the station is doing better in relationship to other stations at night (20% share vs. 15% share), the total *number* of listeners to the station is greater in the morning (3,750 vs. 3,000 at night).

Do's and Don'ts With Average Quarter-Hour Estimates

You CAN add Average Persons estimates *down* (vertically) for various stations and you CAN add Average Persons estimates *across* (horizontally) sex-age groups in a given time period. For example, you can add the Average Persons estimates of station WWTM to station WREF to arrive at the total Average Persons audience to both stations. You also can add the 18-24 Average Persons audience to the 25-34 audience for station WWTM to obtain 18-34 persons. You CANNOT add Average Persons estimates *across* two or more time periods.

You CAN add Average Ratings *down* for stations the same as you can for Average Persons but you CANNOT add Average Ratings *across* sex-age groups. The reason you cannot is that the population base for each sex-age group is different. Adding the rating of Men 18-24 to a rating for Men 25-34 would produce a meaningless figure, because the estimates are calculated using two different population bases. However, you can add the Average Persons estimates for Men 18-24 and Men 25-34 and then divide by the population for Men 18-34 to calculate an average rating. You CANNOT add Average Ratings *across* time periods.

You CAN add Metro Share estimates *down* for various stations the same as you can for Average Persons but you CANNOT add Metro Share estimates *across* sex-age groups. The reason you cannot is that the Average Persons bases used to calculate Metro Shares are different for each sex-age group. Any estimate arrived at by adding Metro Share figures across sex-age groups would be meaningless. You CANNOT add Metro Shares *across* time periods.

NOTE: When adding Average Persons, Average Ratings or Metro Shares, use the AM-FM TOTAL line, whenever it is present, instead of the individual estimates for the two affiliates. If you added the audiences of the individual affiliates *and* the AM-FM TOTAL line, you would be "double-counting" the audiences to the two stations.

Cume Estimates

Cume estimates are expressed in terms of *Cume Persons* and *Cume Ratings*. Each of these is discussed below.

Cume Persons tell you the *number* of different persons who listened at least once during the time period of interest. It does not matter how long this listening occurred.

A person who listened for only five minutes during the time period Monday-Friday, 6 AM-10 AM, and a person who listened all four hours on each day *are counted the same* in a cume estimate. Each person is counted only once.

The Cume Persons estimate is somewhat analagous to newspaper circulation. Newspaper circulation is expressed in terms of the number of *different* households that receive the newspaper without regard to how much time people actually spend reading the paper or how many different times the same issue is read. A Cume Persons estimate reflects the number of different persons who listened five or more minutes at least once without regard to how long they listened or how many times they listened during a given time period.

Other words for "cume" sometimes used in broadcasting research include the following: "unduplicated audience," "reach," "circulation."

Cume Ratings express the number of Cume Persons as a *percentage* of the metro population. The Cume Rating is found by dividing the number of Cume Persons by the metro population for the sex-age group. For example, if the Cume Persons estimate for WWTM among Men 18-49 is 75,000 and the Metro population for Men 18-49 is 175,600, then the Cume Rating is 42.7% (75,000 ÷ 175,600). This means more than 4 out of 10 persons listened to WWTM at least once during the time period.

Cume ratings are often used to show audience "penetration" because they give an indication of the extent to which a station "penetrates" or reaches the total potential metro population at least once during a time period.

Exclusive Cume Estimates

Exclusive Cume Persons tell you the *number* of different persons that listened at least once to a given station *and to no other station during the time period.* "Exclusive Cume Persons" is an indication of station loyalty because it refers to an "exclusive" audience that can be reached on one station and on only that station during the time period.

Do's and Don'ts With Cume and Exclusive Cume Estimates

You CAN add Cume Persons *across* (horizontally) sex-age groups but you CANNOT add Cume Persons *down* (vertically) for stations. If you were to add Cume Persons down for various stations, you would be counting some of the audience more than once because some people listen to more than one station in a time period. You would not know which persons you were counting only once and which persons you were counting more than once. You CANNOT add Cume Persons *across* time periods.

You CANNOT add Cume Ratings *down* for stations for the same reason you cannot add Cume Persons down: you would be counting some listeners more than once. You CANNOT add Cume Ratings *across* sex-age groups because the population base for each sex-age group is different. You CANNOT add Cume Ratings *across* time periods.

You CAN add Exclusive Cume Persons *down* because the audience reported for each station is exclusive and adding exclusive audiences will not result in audience duplication. You CAN add Exclusive Cume Persons *across* sex-age groups. Use the AM-FM Total line if present when adding Exclusive Cumes. You CANNOT add Exclusive Cume Persons *across* time periods.

If you now understand the differences among the three kinds of estimates (Averages, Cumes, and Exclusive Cumes) you know all you need to know about what the estimates mean and what you can and cannot do with them.

Section III

How to Use Radio Audience Estimates

Radio audience estimates can be used in a variety of ways to tell you about individual station performance as well as about the radio medium itself. In this section we are going to review some of the more frequently used methods of evaluating and presenting audience estimates.

1. Computing Cost Per Thousand (CPM)

Using Average Persons Estimates

a. Determine Gross Impressions

Average Persons Estimates x No. of Spots = Gross Impressions

b. Compute CPM

$$\frac{\text{Cost (+000)}}{\text{Gross Impressions}} = \text{CPM}$$

c. Example

Average Persons		55,500
Cost Per Spot (24 Plan)	=	$90
No. of Spots	=	24
Total Schedule Cost:	=	$2,160

55,500 x 24 = 1,332,000 impressions

$$\frac{\$2{,}160\ (+000)}{1{,}332{,}000} = \$1.62 \text{ CPM}$$

With 24 spots at a cost of $2,160, the cost per thousand persons reached is $1.62.

Shortcut Method

$$\frac{\text{Cost Per Spot}}{\text{Average Persons Expressed in Thousands}} = \frac{\$90}{55.5} = \$1.62$$

2. Computing Cost Per Rating Point

Using Average Rating Estimates

a. Determine Gross Ratings

Average Rating x No. of Spots = Gross Rating Points

b. Compute cost per rating point

$$\frac{\text{Cost}}{\text{Gross Rating Points}} = \text{Cost Per Rating Point}$$

c. Example

Average Rating	=	1.4
Cost Per Spot (24 Plan)	=	$90
No. of Spots	=	24
Total Schedule Cost	=	$2,160

1.4 x 24 = 33.6 gross rating points

$$\frac{\$2{,}160}{33.6} = \$64.28 \text{ cost per rating point}$$

If an advertiser wanted to buy 10 rating points, it would cost $642.80 ($64.28 x 10).

Shortcut Method

$$\frac{\text{Cost Per Spot}}{\text{Average Rating}} = \frac{\$90}{1.4} = \$64.28$$

Time Spent Listening

You can determine the amount of time spent listening to each station in the market using the simple formula below.

There are 100 quarter hours in the time periods Monday-Friday, 10AM-3AM and 7PM-Midnight. There are 80 quarter hours in the time periods Monday-Friday, 6AM-10AM and 3PM-7PM. To determine the number of quarter hours in a time period, multiply the number of hours in the time period by 4 and then multiply this answer by the number of days in the day-part. Example: Monday-Sunday, 6AM-Midnight = 18 hours a day x 4 = 72 x 7 days = 504 quarter hours.

In the example below, based only on the Average Persons audience, Stations 1 and 2 are in a virtual tie but when time spent listening to each of the stations is computed, we find the average listener to Station 2 listens 23.5 quarter hours to only 13.9 for Station 1. If the advertising goal is to reach as many different people as possible without regard to frequency, then Station 1 might present the best selection. If the goal is to reach the same people over and over again, then Station 2 would be the best of the three. But if the goal is to gain some balance between the number of times each person is exposed and the number of different persons who were exposed, Station 3 might present the optimum audience.

Many report users compute time spent listening for several different stations in the report to determine if the number of quarter hours is different for specific kinds of station formats. If you do this, you can expect to find differences among station formats. Generally, the more unlike the formats are, the greater the differences will be. These kinds of analyses do not indicate the "value" of the station as an advertising opportunity but they do give a general picture of the interaction of the Average and Cume Persons estimates.

	No. of Quarter Hours in Time Period	x	Average Persons Audience (00)	=	Gross Qtr.-Hrs. of Listening	÷	Cume Persons Audience (00)	=	Time Spent Listening
Station 1	100		142		14,200		1,024		13.9 qtr. hrs.
Station 2	100		143		14,300		610		23.4 qtr. hrs.
Station 3	100		193		19,800		1,088		18.2 qtr. hrs.

Reach and Frequency

"Reach" is the number of different persons who are expected to listen at least once (unduplicated audience) to a given spot schedule. "Frequency" is the average number of times the unduplicated listeners will be exposed to the spot schedule.

Example:

Reach (Cume)	=	44,600
Average Persons	=	10,900
Spot Schedule	=	12 spots
Gross Impressions	=	12 x 10,900 = 130,800
Frequency	=	130,800 ÷ 44,600 = 2.9

$$\text{Frequency} = \frac{\text{Gross Impression}}{\text{Cume}}$$

You can determine the average amount of time people spend with radio in your market by using the metro totals to compute time spent listening as shown in the example below. This is calculated the same as shown in the "Time Spent Listening" example on the previous page.

Market Information
Time Spent Listening by Day-Part: Women 18+

		Average (00)	Cume (00)	Time Spent Listening ¼ Hrs.	Hours
Mon-Sun	6AM-Mid.	1,550	9,919	78.8	19.7
Mon-Fri	6AM-10AM	2,167	8,315	20.8	5.2
	10AM- 3PM	1,482	5,620	26.4	6.6
	3PM- 7PM	1,781	8,072	17.7	4.4
	7PM-Mid.	1,166	9,339	12.5	3.1

Audience Turnover

One of the computations frequently made by report users indicates the station's turnover factor. This is simply an approximation of the number of times the audience changes during a time period. Turnover is computed by dividing a station's Cume Persons audience by the Average Persons audience as illustrated in the examples below.

Turnover is a fast way of determining the relationship between a station's Average Persons and Cume Persons audience. In the example below, the audience of Station 1 turns over 3.5 times during the 6AM-10AM time period whereas the audience of Station 3 turns over 9.3 times.

Put another way, Station 1 is doing a good job of keeping those listeners that tune to the station whereas Station 3 has a much higher turnover in its audience. An advertiser can reach the audience of Station 1 with fewer spots than it will take to reach the total listening audience of Station 3.

As we said, station turnover is a relative indicator of the differences between the Average audience and the Cume audience. Having a low turnover does not mean the station offers a better advertising opportunity nor does having a high turnover indicate this either. The relevancy of turnover depends upon the advertising goals in terms of reach (cume) and frequency (number of times exposed).

Monday-Friday, 6AM-10AM

	Cume Persons (00)	÷	Average Persons (00)	=	Turnover Factor
Station 1	3,140		910		3.5
Station 2	1,005		165		6.1
Station 3	835		90		9.3

Station Ranking Reports

One of the simpler kinds of analyzing station performance is a ranking of stations based on the reported estimates. This can be done for any demographic for Average and Cume Persons in either the Metro or Total Survey Area. It also can be done based on shares or ratings.

The example below shows an excerpt from a Station Ranking Report produced by Arbitron Radio for a market.

Station rankings, when compared on the basis of several surveys, give you a quick indicator of change among stations over time.

In evaluating station rankings, you should keep in mind that frequently the difference between one rank position and another may amount to only a few hundred people. Stations separated by only a few hundred persons in terms of audience may be in a virtual tie in terms of actual statistical differences. The numbers in Arbitron's reports are "estimates" and all estimates are approximations subject to statistical variation related to sample size.

MARKET - YOUR CITY
METRO SURVEY AREA — MONDAY-FRIDAY 10AM-3PM — AVERAGE QUARTER HOUR PERSONS (IN HUNDREDS)

TOTAL PERSONS 12+			ADULTS 18+			MEN 18+			WOMEN 18+			TEENS 12-17		
RANK	STATION	PERSONS	RANK	STATION	PERSONS	RANK	STATION	PERSONS	RANK	STATION	PERSONS	RANK	STATION	PERSONS
1	WAAA AM	122	1	WAAA AM	117	1	WBBB AM	53	1	WAAA AM	75	1	WCCC AM	19
2	WBBB AM	116	2	WBBB AM	114	2	WAAA AM	42	2	WBBB AM	61	2	WAAA AM	5
3	WCCC AM	66	3	WDDD FM	65	3	WCCC FM	17	3	WDDD FM	52	3	WBBB AM	2
4	WDDD FM	65	4	WCCC AM	47	4	WCCC AM	16	4	WCCC AM	31	4	WCCC FM	1
5	WEEE AM	35	5	WEEE AM	34	4	WEEE AM	16	5	WFFF/WFFF	23	4	WEEE AM	1
6	WFFF/WFFF	29	6	WFFF/WFFF	29	6	WDDD FM	13	6	WEEE AM	18	6	WDDD FM	
7	WCCC FM	19	7	WCCC FM	18	7	WFFF/WFFF	6	7	WCCC FM	1	6	WFFF/WFFF	

Multiple Report Averages

Some report users "average" the results of two or more surveys and use this average for buying and/or selling time. The example below shows how report averaging is done.

In this example, Station 2 was ahead of Station 1 in the April/May survey but was behind Station 1 in the following survey. Averaging the two surveys produces identical estimates of 13,000 for both stations.

Averaging of reports is generally done because it is felt that it increases the reliability of the estimate due to the larger sample sizes used in the estimating procedure. While this rationale certainly has merit, the drawback to report averaging occurs when a station has made a significant programming improvement that results in substantial increases in its audience, and perhaps corresponding decreases in its competitors' audiences. In this case, report averaging would not produce a better estimate of the station's potential audience delivery because previous reports would not reflect the effects of the new programming strategy.

Monday-Friday, 6AM-10AM
Men 18-49
Average Persons

	April/May	+	October/November	=	Sum of 2 Surveys	÷	No. of Surveys	=	Average of 2 Surveys
Station 1	10,000		16,000		26,000		2		13,000
Station 2	17,000		9,000		26,000		2		13,000

Hour-by-Hour Analysis: Average Persons

An example of an hour-by-hour analysis based on Average Persons appears below. While this one was done on the basis of Total Persons 12+, Men 18+, and Women 18+, this can easily be done on any demographic group.

This kind of analysis is useful for answering these kinds of questions:

a. At what point within each major day-part does the audience change . . . or does it remain fairly constant from hour to hour within a day-part?

b. Do the audiences for Men and Women approximate each other in size or is there a noticeable difference? Is this difference confined to the current survey or is there an apparent trend over surveys?

c. Does the total survey area audience change as a function of changes in metro audience or changes in non-metro audience? For example, if the metro audience size remains fairly constant and there are changes in the size of the total survey area audience, these changes must be occurring in the non-metro survey area.

d. Is there any noticeable seasonal variation? Are the April/May audiences more nearly alike than the October/November audiences? Is this a function of programming on this station?

Analysis of WWTM Average Persons

	APRIL/MAY 1975				OCT./NOV. 1974				APRIL/MAY 1974			
	TSA	MSA			TSA	MSA			TSA	MSA		
Day-Parts	T	T	M	W	T	T	M	W	T	T	M	W
6-10	76	67	24	41	90	84	30	52	88	75	30	44
10-3	36	31	11	20	30	26	7	19	31	28	11	17
3-7	28	24	10	13	24	23	11	12	28	25	11	14
7-Mid.	12	11	5	6	11	11	5	6	11	10	3	7
Hourly												
6-7	82	76	33	40	95	91	42	46	78	77	35	41
7-8	95	84	28	53	119	112	41	65	121	99	38	58
8-9	72	62	20	41	86	81	23	58	88	73	26	47
9-10	55	45	14	31	59	53	11	42	64	54	21	33
10-11	47	40	14	26	40	37	9	28	39	36	14	22
11-Noon	44	39	12	26	34	34	10	24	37	36	13	23
Noon-1	37	31	11	19	27	25	7	18	34	31	12	19
1-2	28	24	8	15	22	17	6	11	27	25	11	14
2-3	24	20	71	12	22	19	6	13	24	24	12	12
3-4	26	22	8	12	25	22	10	12	29	26	12	14
4-5	32	28	12	16	29	28	13	15	30	28	12	16
5-6	33	29	13	16	31	28	15	13	32	29	13	16
6-7	21	18	7	11	14	13	6	7	17	17	7	10
7-8	21	20	10	11	18	18	7	11	18	17	3	14
8-9	10	9	4	5	7	7	3	4	11	10	4	6
9-10	11	11	4	6	9	9	4	5	10	9	3	6
10-11	11	10	4	6	11	10	3	7	9	8	4	4
11-Mid.	5	5	1	3	12	10	3	7	5	5	2	3

TSA = Total Survey Area MSA = Metro Survey Area T = Total Persons
M = Men 18+ W = Women 18+

Hour-by-Hour: Metro Share

You may want to compare audiences within major day-parts on the basis of metro share. One advantage of this is that it eliminates any differences attributable to changes in the population bases which could affect the absolute numbers. The same kind of evaluation described in the previous example can be done using metro shares.

Analysis Of WWTM Metro Share

Day-Parts	APRIL/MAY 1975			OCT./NOV. 1974			APRIL/MAY 1974		
	T	M	W	T	M	W	T	M	W
6-10	31	32	33	42	43	46	38	42	40
10-3	21	20	22	24	25	26	22	24	22
3-7	14	15	16	16	22	18	17	21	19
7-Mid.	9	11	12	17	20	29	10	9	16
HOURLY									
6-7	41	46	43	46	46	52	42	47	45
7-8	29	29	35	40	41	46	34	37	41
8-9	29	31	31	41	38	44	40	45	40
9-10	25	23	27	37	31	41	34	34	33
10-11	24	24	26	27	27	30	26	32	24
11-Noon	25	22	27	29	33	30	27	29	26
Noon-1	20	21	20	23	27	23	21	26	20
1-2	18	18	18	19	23	18	20	25	19
2-3	16	14	17	21	22	23	22	26	21
3-4	14	14	16	17	25	19	18	22	20
4-5	14	16	18	17	22	20	16	19	20
5-6	14	17	17	17	22	18	17	21	20
6-7	12	13	15	11	14	13	15	19	19
7-8	15	21	17	18	21	26	16	10	26
8-9	7	8	8	10	11	17	8	8	12
9-10	7	8	11	13	13	28	7	6	12
10-11	8	9	15	15	13	29	8	10	10
11-Mid.	8	6	15	29	19	41	9	13	13

T = Total Persons M = Men 18 + W = Women 18 +

Distribution of Station vs. Total Metro Listening (Average Persons)

From a programming viewpoint, it is useful to know how much of the total listening to the station occurs during each hour of the day. Knowing this information allows station management to identify those hours of the day in which programming might be modified to achieve higher audiences.

In the example below, Average Persons audience for the station has been distributed (i.e., percented to the total) first across the major day-parts and then on an hour-by-hour basis. The base for calculating hour-by-hour percentages is the sum of the Average Persons audience across all day-parts.

To give a benchmark with which to compare WWTM's audience distribution, the same kind of distribution was prepared on the basis of total metro listening by *all* stations (the bottom line in the hour-by-hour section). WWTM then can compare its audience distribution on both a day-part basis and on an hour-by-hour basis with listening to all stations in the metro. For example, the analysis below shows the station with 47% of its Total Persons 12+ audience occurring 6AM-10AM whereas only 33% of the listening for all stations in the market occurs in this time period. In this example, WWTM may well conclude that an excellent programming job is being done in morning drivetime and may wish to do nothing to change it.

	Station WWTM				All Stations			
Mon-Fri Day-Parts	T.P. 12+	M 18+	W 18+	Teens	T.P. 12+	M 18+	W 18+	Teens
6-10	47 %	49 %	46 %	46 %	33 %	35 %	34 %	25 %
10-3	17	13	21	8	25	24	27	16
3-7	25	27	22	23	26	25	25	32
7-Mid	11	11	11	23	16	16	14	27
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%
Hourly								
6-7	11	14	9	7	6	8	6	4
7-8	15	15	15	17	10	10	9	11
8-9	11	11	11	13	8	8	8	5
9-10	7	6	8	4	6	6	8	3
10-11	5	4	7	—	6	6	7	3
11-Noon	4	4	5	3	6	6	7	3
Noon-1	4	3	5	3	6	6	6	4
1-2	3	2	4	3	5	5	6	4
2-3	3	2	3	3	5	5	6	4
3-4	3	2	3	6	5	5	5	7
4-5	6	7	4	6	7	7	6	9
5-6	9	10	8	6	7	7	6	7
6-7	6	7	5	3	5	5	5	6
7-8	3	3	4	3	5	4	4	6
8-9	3	3	3	7	4	4	3	7
9-10	3	3	3	4	4	3	3	7
10-11	2	2	2	5	3	3	3	6
11-Mid	2	2	1	7	2	2	2	4
	100%	100%	100%	100%	100%	100%	100%	100%

Audience Composition: Average and Cume Persons

To avoid surprises, it is useful to evaluate the composition of a station's audience for each survey and compare it to that of previous surveys. This kind of analysis frequently uncovers subtle problems. For instance, in the example below, an examination of the station's audience across survey periods indicates its audience is increasing in the older sex-age groups and decreasing in the younger groups. This suggests if nothing is changed in the station's programming in the course of another year the station's rank with respect to delivery of 18-34 audiences could fall appreciably.

Audience Composition of WWTM, Average & Cume Persons

		APRIL/MAY 1975		OCT./NOV. 1974		APRIL/MAY 1974	
		Avg.	Cume	Avg.	Cume	Avg.	Cume
Men	18-24	2.1%	2.7%	3.2%	2.8%	7.1%	4.2%
	25-34	3.5	5.6	6.4	7.2	7.1	7.5
	35-49	9.1	14.7	12.9	14.4	10.7	14.1
	50-64	10.9	11.3	9.7	11.1	10.7	12.2
	65+	11.2	7.7	3.2	5.5	7.1	6.6
	18+	36.8	42.0	35.4	41.0	42.7	44.6
Women	18-24	2.1	3.5	6.4	3.7	3.6	4.0
	25-34	8.1	7.2	9.7	7.9	10.7	9.4
	35-49	20.4	15.8	19.4	16.4	17.9	15.5
	50-64	16.8	14.2	12.9	13.3	17.9	14.1
	65+	13.7	10.8	12.9	10.9	7.1	8.7
	18+	61.1	51.5	61.3	52.2	57.2	51.7
Teens	12-17	2.1	6.5	3.2	6.8	—	3.7
Total Persons	12+	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Why 100 Gross Rating Points Do Not Deliver 100% of the Available Audience

Some people mistakenly believe that if they buy 100 gross rating points in a market, they are buying the total population. That is, they are buying 100% of the available listeners. The logic is that if one rating point equals one percent of the population, then 100 rating points must equal everyone in the market. The purpose of this discussion is to explain what rating points mean and why 100 rating points do not result in 100% market saturation.

For this example, we will be using the following numbers:

Metro Population, Total Persons 12+ = 1,036,100

Average Quarter-Hour Persons, Monday-Sunday, 6AM-Midnight for WWTM = 13,500

Average Rating, Monday-Sunday, 6AM-Midnight for WWTM = 1.3%

Average Rating, Monday-Sunday, 6AM-Midnight for *all* stations in the metro is 15.6%

1. An Average Rating is calculated by dividing the Average Persons audience by the population in the geographic area. Using the figures above, the average rating for WWTM is calculated as follows:

   13,500 ÷ 1,036,100 = 1.3

2. One percent of the metro population is the same one rating point:

   10,361 = 1% = one rating point

3. The average rating gives you the *percent* of metro persons listening during a given quarter hour for a specific time period. If you wanted to rotate a spot schedule through a given time period, you would use average quarter-hour estimates to "estimate" your audience delivery.

   Let us assume only one spot was bought to be broadcast sometime during the period Monday-Sunday, 6AM-Midnight. According to the estimates above, during any given quarter hour we can expect an estimated audience of 13,500 persons. Therefore, the estimated audience for this one spot is 13,500.

4. When you are buying gross rating points, you are not necessarily buying *different* persons. For example, if you buy 10 gross rating points, you are buying 10 x 10,361 or 103,610 persons . . . but these are not necessarily 103,610 different persons. The *cume* estimates in the Arbitron Radio reports indicate the number of *different* persons who listened but gross rating points, which represent average quarter-hour listening, do not represent or even imply different persons being reached.

5. A buyer buying 100 gross rating points is buying a schedule that will deliver an audience that is equivalent in gross impressions to the size of the total metro population. However, since the listening audience delivered by the schedule will not represent 1,036,100 *different* persons . . . or 1,036,100 persons reached only once, the 100 gross rating points does not include the entire metro population.

6. A buyer may buy 100 gross rating points on a given station, or on a combination of stations, and still not result in everyone in the metro being exposed at least once to the schedule. A buy of 100 gross rating points means the buyer is buying a number of gross impressions *equal* to the total metro population but *not* the same as the total metro population.

Section IV

Test Your Own Knowledge About Radio Research

1. It is not correct to add cume estimates across stations.
2. Average ratings cannot be added across sex-age groups but average persons estimates can be.
3. Ratings and shares, both expressed as percentages, have the same base but different numerators.
4. It is possible to add the exclusive cume of one station to that of another.
5. Average ratings and cume ratings have the same base.
6. An estimate which tells you the number of different persons who listened to a given station during a time period is called an exclusive cume.
7. An estimate which tells you the number of different persons who listened to a given station and to only that station is called an exclusive average audience.
8. Metro shares can never add to 100% unless everyone in the metro is listening.
9. In determining gross impressions, it is important to multiply the number of spots times the average persons audience.
10. If a station had an average audience of 12,000 and a cost per spot of $45, the cost per thousand for 20 spots would be $3.75.
11. Cume ratings are sometimes used as an indication of a station's audience penetration in a market.
12. A person who listened to all quarter hours during a time period will count more in the cume persons estimate than a person who listened for only one quarter hour.
13. For a station with an average persons audience of 25,700 and cume persons of 135,500, the time spent listening for Monday-Friday, 6AM-10AM is 15.2 quarter hours.
14. Using the example above, the turnover factor for this station would be 5.3.
15. Average persons estimates can be added vertically across stations and horizontally across sex-age groups within a given time period.
16. Metro share estimates can be added horizontally across sex-age groups for a given station but not vertically across stations.

Turn Page Over For Answers . . .

Answers To Quiz

1. T	5. T	9. T	13. T
2. T	6. F	10. T	14. T
3. F	7. F	11. T	15. T
4. T	8. F	12. F	16. F

Grade Your Own Score

Number of Correct Answers	Grade	Action
14-16	A	Read material quickly and pass on to a friend.
12-13	B	Read material carefully, especially if a friend gave you this.
10-11	C	Don't give your copy away!
9 or less	HELP!	Call your Arbitron Radio sales representative.

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8M/4-76