AUDIENCE RATINGS

A Primer for Non-Commercial Radio Stations

Radio Research Consortium

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RRC, Inc.—Serving Non-Commercial Radio Since 1981

ACKNOWLEDGEMENTS

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Introduction

All radio stations have some reason for being; they are providers of a service. Most non-commercial radio stations define their service by a Mission Statement that generally opens up with words like, "We will endeavor to provide . . .". Often, explicitly missing from the statement of purpose is that which is implicit: "We will endeavor to provide to people . . .". There must always be recipients of the service, consumers, listeners, before the service has been fully provided.

Even for commercial stations that define success based on a bottom line of dollars and cents, the profit margin is largely dependent on their success as a provider of a service to people. A commercial radio station's ability to attract revenue is dependent on how much service it provides; in other words, to how many listeners, and which listeners. While non-commercial stations may define success in more esoteric terms than profit, the bottom line for all radio stations is that a mission, whether it is to make money or culturally attune, educate, or inform, cannot be achieved if there are no listeners.

Audience Ratings are the only truly objective means in existence of determining who is using (or not using) the service that a radio station provides. However, what is genuinely valuable about Audience Ratings is that they can tell you so much more.

All elementary textbooks on marketing outline the
same basic principles:

1)   Know your product (or service)_ _
2)   Know who your potential consumers are
3)   Know your competition

Audience Ratings provide knowledge in all three
categories.   They are a quantitative measure of
the state of the marketplace at a certain point in
time.   Creative use of the quantitative data not
only allows the determination of success in achiev-
ing past goals, but in determining what is possible
in the future.   They tell you where failures have
occurred and where changes can be made for
greater future success.   The ratings may even
suggest what kinds of changes to make; but, they
never provide a "How To".   The ratings cannot
teach station personnel how to attract listeners,
or how to sustain listening.   Instead, the ratings
are the yardstick to determine if listeners were
attracted and if listening was sustained.   As such,
they may be a teaching tool for the future, but
rarely do they provide all the answers.

The lofty goal of achieving mission has recently
been buttressed by a more rudimentary concern.
Many non-commercial radio stations are becoming
increasingly dependent on financial support from
non-governmental and non-institutional sources.
"Listener-Supported" is becoming more than just a
slogan; it is a growing necessity for many stations.

The Radio Research Consortium (RRC) in 1983
performed a small study of the financial data for
its membership, finding that the amount of a
station's listener support, in dollars, was directly
related to the size of the station's audience.
David Giovannoni, in 1985, while a consultant with
National Public Radio (NPR), performed a study of
known public radio listeners to determine why
only some financially supported the station.   The
direct relationship between time spent listening to
a public radio station and a listener's propensity
to support the station was clear.   In order to
derive financial support from the audience, stations

must provide their audience with a reason to listen and to maximize the time spent using the station.[1]

Again, audience ratings do not provide the "how to". The ratings do provide information that lets you know if you are succeeding in attracting listeners and in providing them with the opportunity and programming that allows them to listen longer. The ratings also provide indications of where and which kinds of corrective measures are best applied to attract listeners and to increase the amount of time they spend with the station.

Advocating the use of audience ratings to maximize "cume" and "time spent listening" is not the same as promoting programming to the "lowest common denominator." Specifying in the mission statement the type of service a station will provide places inherent limits on the size of the audience that can be achieved. It identifies a target audience, that is, only a subset of the total radio audience. Judicious use of audience research, though, can assist stations in reaching the maximum number of targeted listeners for sustained periods of time. Use of audience ratings can help stations achieve mission with an important side benefit for those non-commercial radio stations that require financial support from their listeners.

This book, first, introduces readers to the basic concepts of audience data, how the audience ratings translate from broadcast research terms to a measurement of behavior patterns by listeners. Audience ratings are produced via a survey methodology; a review of the two major methodologies

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[1] _Public Radio Listeners: Supporters and Non-Supporters, An Examination of The Causes Influencing The Decision of Public Radio's Listeners to Support or Not Support Public Radio_, Prepared by David Giovannoni of Audience Research Analysis, Under contract with The Corporation of Public Broadcasting, 1985.

and some of their limitations and strengths are
included.   A review of listening data at the na-
tional level is included to help provide insight
into how people use all radio, and in some cases,
how that data has changed over time.   How to
use the audience data to determine how people
use radio in the local market is also included.
The opening section of the book provides the
framework of knowledge for the remaining sec-
tions.

The second section of the Primer is devoted to the
various audience ratings reports that stations may
receive.   Even when a station does not receive a
specific type of audience analysis, the section
will, we hope, provide knowledge about what can
be learned from audience ratings for any station,
no matter what the source or content may be.

The third and final section covers some of the
common buying and selling terminology that is
used in conjunction with the audience data.
While the terminology may be specific to commer-
cial endeavors, non-commercial stations can still
utilize the concepts behind some of the terms to
understand the audience for the station.

The book is intended for non-commercial radio
station Management, as well as the Programming
and Development staffs -- it is these station
personnel that can most use audience ratings.
The book is, initially, best read from start to
finish.   At times, the concepts presented may
seem confusing, perhaps even unintelligible, espe-
cially to the uninitiated or novice audience re-
search user.   Understanding comes with continued
application.

Although the book is intended as a "primer",
we've included some fairly advanced applications.
So no matter how long you may have been using
the ratings, we think you can gain new insights
into what may be learned from the information.
We have not included every possible way of exam-
ining and using audience data, and the field is by

no means static.   Audience researchers are always
devising new ways of displaying analyses of the
ratings, not because the types of numbers them-
selves are new, but to further assist research
users in understanding their implications.   The
exciting part of audience ratings is not the num-
bers, but their use, based on a continuing effort
to better understand what they represent in terms
of audience behavior.   Knowing how your listeners
use your station, when they use it and when they
don't, can provide powerful insights into how to
best serve those listeners.   And, once again,
providing a service to listeners, an audience, is
the heart of the reason for public radio's exist-
ence.

Section One

The Basics of Audience Measurement

Chapter One

Radio Audience Estimates -- Basic Definitions

More than 100,000 statistics can be produced by an audience measurement company describing listening behavior for one market and for one survey period. These statistics can be presented along several different facets:

Geography -- audience information may be presented for one, two or three geographies, or a customized area, depending upon the market that is measured, and by which audience measurement company.

Metro Survey Area -- this geography generally corresponds to a government-defined county configuration, known as a Metropolitan Statistical Area. Abbreviated as Metro, MSA or Met.

Total Survey Area -- a geography that has been patterned to include those counties that are penetrated significantly by stations licensed to the Metro Survey Area. The Metro Survey Area plus the Non-Metro survey area yields the Total Survey Area. Abbreviated as TSA or Total.

Area of Dominant Influence -- an Arbitron Television geography defined by television viewing (not radio listening) patterns. The geography may or may not include all counties included within the Metro and Total Survey

Areas of the radio market.   Abbreviated as ADI.

Custom Areas -- Produced to the geographic
specification of the client station.   Sometimes
abbreviated TAR (Trading Area Report) or PSA
(Primary Signal Area).

When audience estimates are cited, they must
always include a geographic designator.

Demographics -- age groupings, further refined by
sex, and sometimes ethnic group.   The most dis-
crete age groupings currently available are: 12-
17, 18-24, 25-34, 35-44, 45-49, 50-54, 55-64, and
65+, further delineated as Male and Female.
These distinct age groupings can be combined to
create "Target Audience" groupings, such as Adults
25-54, or Men 25-49, or Persons 12-24.   The sum
of all discrete groups is equal to Persons 12+.

The limit on the reported age groupings is due to
a standing decision by the measurement companies
that these are as small as they wish to stratify
the listening results.   The addition or deletion of
age groupings is always a possibility as the US
population profile changes.

Currently, standard measurement techniques make
no attempt to measure the listening behavior of
persons under the age of 12.

When audience estimates are cited, they must
always include a demographic designator.   Unless
there is a reference to ethnic group (Black or
Hispanic) in the demographic description, the
estimates are assumed to be Total persons (ie.,
from all ethnic groups).

Daypart -- a Time Period comprised of one or
more days of the week for one or more quarter-
hours of the day.   A daypart may be as small as
Monday 5:00-5:15AM, or as large as Monday-Sunday
24 hours.   In general, audience estimates are

reported for large blocks of time, not necessarily
of equal length.   Standard dayparts include:

        Monday-Friday 6AM-10AM -- Morning Drive
        Monday-Friday 10AM-3PM -- Midday
        Monday-Friday 3PM-7PM -- Afternoon Drive
        Monday-Friday 7PM-12M -- Evening
        Monday-Friday 6AM-7PM -- Daytime
        Mon-Fri 6A-10A + 3P-7P -- Combined Drive

Saturdays and Sundays can also be broken down
into time blocks; other commonly reported dayparts
include hourly time periods such as Monday-Friday
7AM-8AM or Saturday 12Noon-1PM.

When audience estimates are cited, they must
always include a daypart designator.

Audience estimates, then, are presented along
three dimensions: Geography, Demographic, and
Daypart.

Despite the fact that a survey period may encom-
pass multiple calendar weeks (from two to twelve
depending upon the measurement service), audience
estimates are always presented for an "average
week".   That is, listening behavior that has been
measured across multiple weeks will be reported
as if only one week had been measured.   Reported
audience data are the average of the listening
behaviors recorded for each week in the survey
period.

Definition of the Audience Estimates

Only two different audience estimates are actually
presented for any given geography, demographic
and daypart.   However, the estimates can be
displayed in different ways.

The basic unit of time in the measurement of
radio listening behavior is the quarter-hour, a
fifteen-minute time block starting at :00, :15, :30,

or :45 in any hour.   Any person who reports
listening to a station for at least five minutes
within that fifteen-minute time block is counted
as a listener.

The Two Estimate Types

   Cume -- also known as the total reach (or
   penetration) of a radio station for a given
   geography, demographic and daypart.   The cume
   is the measure of the number of different people
   who listen.

   Once a person has been identified as a listener,
   that persons is counted in the cume.   The length
   of listening (outside of the five minute minimum)
   has absolutely no bearing on cume.   Even if the
   listener listens 18 hours per day, seven days a
   week, that person can only be counted in the
   cume once.

   The cume for a radio station is sometimes com-
   pared to the circulation of a newspaper, compu-
   ted by counting the total number of different
   households that receive the newspaper, regardless
   of how much time was spent reading it, or how
   many sections were perused.   In fact, another
   synonym for cume is circulation.

   Average Quarter-Hour -- often abbreviated as
   AQH.   By definition, the term refers to the
   estimated number of people listening at some
   average point in time (remembering that, in
   radio, point in time means quarter-hour).   The
   AQH is computed by averaging the individual
   quarter-hour cumes during the daypart being
   reported.

Both of these estimate types may be reported for
an individual station, or for a combination of
stations (normally an AM and FM simulcast
pairing).

In addition, both cume and average quarter-hour
estimates may be reported for the market (normally
in the Metro or ADI survey areas); that is, listen-
ing to all stations (reported and not reported by
the measurement company) is combined for repor-
ting at the market level. These Market Level
audience estimates are often referred to as Persons
Using Radio, or, PUR data. (PUR is always pro-
nounced as a series of letters, never like the
sound of a cat.)

An analogy might assist in the understanding of
the difference between the two estimate types.
Imagine a department store in a busy shopping
mall.   In a typical week, 10,000 different shoppers
might enter the store. This total number of
different shoppers is analogous to a station's
cume.   At any given point in time, during the
week, an average of about 150 people are in the
store.   This number is the average estimate for
the store and analogous to a station's average
quarter-hour.   Not all shoppers use the store at
the same time, nor is it likely that any one shop-
per is in the store during the entire time the
store is open. The total number of people using
the store over an entire week is always greater
than the number of people in the store at any
one point in time. The same is true of radio
station listeners. While 10,000 listeners might
tune in a station over the course of a week,
during a typical quarter-hour some number far
less than 10,000 will be listening.

Three Displays of the Estimate Types

Each estimate type may be displayed in one of
three different ways: persons, rating, or share.

Persons -- the total count, whether cume or
AQH, of the number of people listening.   Almost
always rounded to the nearest one hundred
persons, with the last two zeroes of the estimate
dropped for display purposes.   Thus, a reported

persons estimate of 43 should be read as 4,300. Because of rounding to the nearest hundred, an estimate of 0 does not necessarily mean no listeners.   A zero estimate means something less than 50 listeners were projected.

Rating -- the Persons estimate expressed as a percent of a universe. In normal parlance, that universe is the population (for the demographic in the geography).   Average Quarter-Hour Ratings can appear very tiny (eg., .2%); they are mainly reported and utilized for buying and selling radio time, except at the Market Level, when they can be used to gauge comparative listening levels across demos, or across markets. Often, reporting of a Rating is relegated to the Cume estimate type.   A Cume Rating of 9.7% for a station infers that the station is reaching 9.7% of the population (for the demographic in the geography).

Share -- again, a Persons estimate for a station expressed as a percent of a universe. In normal parlance, that universe is the Average Quarter-Hour Persons Using Radio estimate for the daypart, demographic, and geography.   Among commercial   broadcasters, this is the most commonly used and cited estimate. (While Share is almost exclusively used in reference to Average Quarter-Hour estimates, some audience researchers have delved into the meaning of cume shares.)   When listings of commercial radio station estimates appear in the newspaper, it is almost always the station Shares that are cited. One can almost argue that Share is the ultimate measure because it expresses a station's Average Quarter-Hour audience in the context of the Average Quarter-Hour audience for all radio.

While Persons estimates are absolute measures, both Rating and Share are relative measures.   A station with a cume estimate of half-a-million persons certainly has more absolute listeners than a station with a cume estimate of 100,000.   But that smaller station may be reaching 6% of the

available population (its Cume Rating), while the larger station might only be reaching 3%.   Ratings then are relative to the population of the market.

Share is relative to the number of people listening.   A station may achieve a 50.0% share, Sunday 6A-7A.   But, if the Persons Using Radio in the Average Quarter-Hour for that daypart is only 1,000 persons, then the station's AQH is 5(00). Compare this to the station with a 5.0% share in the Monday-Friday 7A-8A daypart, when the Persons Using Radio AQH is 30,000 persons. While the latter station has a smaller Share estimate, because of the differences in the total listening reported for the two dayparts, this station is serving three times as many listeners in an average quarter-hour as the station with the ten-fold share.

What are Average Quarter-Hour Estimates Really

The concept behind the Cume estimate is probably not too difficult to grasp.   Once a listener turns on a station (for 5 minutes in a quarter-hour) that listener becomes part of the radio cume for the station, and market.   A single listener is never counted more than once when deriving the cume estimate for a single station or for the market.   Once that listener switches the dial and tunes in a new station (for another 5 minutes in a quarter-hour, and it may be the same quarter-hour) the new station's cume estimate grows by "one", while the Market cume remains the same.

But listeners don't listen for average quarter-hours.   Unless the listener is a broadcaster, s/he probably has no understanding at all of what an average quarter-hour estimate is.   Average Quarter-Hour audience is a computation performed by the audience measurement firms.

Average Quarter-Hour audience is, in essence, a reflection of the gross amount of listening by the

cume.   Increase or decrease the cume, and AQH
will increase or decrease because gross listening
has increased or decreased.   Also, increase or
decrease the time spent listening by the cume and
AQH will increase or decrease to reflect the
change in gross quarter-hours.

There are three dimensions to the Average Quar-
ter-Hour audience estimate: Cume, Number of
Occasions, and Quarter-Hours per Occasion.

   Cume: The number of different persons who
   listen at all.

   Number of Occasions: Each tune-in to a station
   is counted as an occasion.   The first time a
   listener tunes in, that listener is counted in the
   cume.   The second tune-in by the listener does
   not increase the cume, but it does add quarter-
   hours to the station's total for that listener.
   Each additional occasion of listening for at
   least five minutes in a quarter-hour, adds at
   least one quarter-hour to that listener's time
   spent listening.

   Quarter-Hours Per Occasion: Each time a listen-
   er tunes in, s/he is not limited to just one
   quarter-hour of listening.   The listener may
   listen for multiple quarter-hours, even hours, on
   one occasion of listening.   During the next
   occasion, the listener may only stay tuned for
   one or two quarter-hours.   Each occasion gener-
   ates some number of quarter-hours of listening.
   The sum of all of the quarter-hours across all
   occasions for a listener is that listener's time
   spent listening, in quarter-hours.

Each listener, each person counted in the cume,
has spent some time listening.   In order to report
Average Quarter-Hour estimates, the audience
measurement firms add up the time spent listening
by the entire cume and then divide that grand
total of quarter-hours-of-listening-by-the-cume by
the number of available quarter-hours for listening.

For example, assume, first, that we want to deter-
mine listening for the Monday-Friday 10AM-3PM
daypart, and, that one hundred listeners tuned in
a station every day, Monday through Friday, at
10AM, a total of five occasions, and listened for
one hour (four quarter-hours per occasion) each
day.   Total time spent listening by each of these
listeners comes to 20 quarter-hours.   A second
group of one hundred listeners tunes in Monday
at 10AM and listens for five hours (one occasion
of 20 quarter-hours), and then again on Friday at
10AM for two hours (one occasion of 8 quarter-
hours).   Total time spent listening by each of the
second group of listeners is 28 quarter-hours.

The cume for the Monday-Friday 10AM-3PM day-
part is 200.   The average quarter hour for that
daypart is computed by summing the time spent
listening by the cume:

		Time Spent Listening by Each Listener		Total Quarter-Hours of Listening
Cume	*	by Each Listener	=	of Listening
100	*	20 QH's	=	2000
100	*	28 QH's	=	2800
			Total	4800

then, determining the number of available quarter-
hours[1] to listen in the Monday-Friday 10A-3P
daypart:

---

[1] The number of quarter-hours available in a
daypart should be stated as the number of
quarter-hours a station is on the air during the
daypart, since that figure is actually the number
of quarter-hours available for listening to that
station.   When the ratings firms indicate that
"audience estimates have been adjusted for actual
broadcast schedule", what they are stating is that
the number of quarter-hours available for a
station was less than the number of quarter-hours
in the daypart.

```
  # of        # of       Four        Quarter-Hours
 Days  * Hours/Day * QH's/Hour  =    Available
   5   *     5     *    4       =       100
```

and, then dividing the Total Quarter-Hours of
Listening by the Quarter-Hours Available:

```
Total Quarter-Hours    Quarter-Hours        Average
    of Listening    +     Available    = Quarter-Hour
      4800          +        100       =      48
```

For the M-F 10A-3P daypart, the sample station
with a cume of 200 has an average quarter-hour
of 48 persons.

The audience measurement firms generally only
report the cume and the average quarter-hour and
leave it to the estimate users to derive the time
spent listening by the cume. For our sample
station, we know that the average time spent
listening by the cume during the Monday-Friday
10A-3P daypart was 24 quarter-hours. There was
an equal number of people listening 20 and 28
quarter-hours. The average of 20 and 28 is 24.

Given two audience estimates, an AQH and a
cume, and deriving the number of quarter-hours
available, estimate users can first compute the
total quarter-hours of listening and then the
average time spent listening by the cume.

```
Quarter-Hours        Average         Total Quarter-Hours
  Available    *   Quarter-Hour   =       of Listening
     100       *        48        =          4800
```

```
Total Quarter-Hours                  Average Time Spent
    of Listening       +  Cume   =        Listening
      4800             +  200    =           24
```

The Average Time Spent Listening result is ex-
pressed in number of quarter-hours of listening.
It can also be converted to hours by dividing the
quarter-hours by four.

Note that the final result is an Average of the
time spent listening by the cume. Of our 200
listeners, there was not one that listened exactly
24 quarter-hours.

Specific patterns of listening behavior of the
cume cannot be constructed given only the AQH
and Cume data.   That is, we have no definitive
way of retracing the number of occasions and/or
the quarter-hours per occasion of listening by the
cume, only the total time spent listening, and the
time spent listening by the average listener.
However, even without this detail, we know that
if the cume is enticed to tune in more often
(increase number of occasions) or to stay tuned
longer (increase quarter-hours per occasion), time
spent listening by that cume will be increased,
and, therefore, the reported AQH also.

We noted above that an increase or decrease in
cume will result in a corresponding increase or
decrease in AQH, when average time spent listen-
ing remains constant.   Conversely, an increase or
decrease in number of occasions and/or quarter-
hours per occasion (and therefore time spent
listening) will result in a corresponding increase
or decrease in AQH, when the cume remains con-
stant.

The Average Quarter-Hour estimate, then, can be
viewed as a measure of a programmer's ability to
increase total usage of the station, whether it be
through growth in the Cume, or improvement in
time spent listening -- by increasing Number of
Occasions of listening (improved Audience Recy-
cling) and/or extending the Quarter-Hours per
Occasion (improved Quarter-Hour Maintenance).

*A Quick Comparison to Television Audience
Estimates*

Many public radio/television joint licensees may
have occasion to examine both Radio and Televi-
sion audience estimates.   In general, the terms
used to describe the listening and viewing esti-
mates are the same, but there are some important
differences.

Television viewing estimates are almost always
expressed in terms of the number of households
viewing.   In radio, number of people (not house-
holds) listening is the basic measure.

The base for computation of a Rating in Televi-
sion, ie., the universe for Television measurement,
is the total number of households with at least
one television set.   The base for computation of a
Rating in Radio is the total number of persons
(12+), without regard to whether those people
have access to or have the physical capacity to
listen to radio.

Television's HUT (Households-Using-Television) is
roughly analogous to Radio's PUR (Persons-Using-
Radio).   Both are a measure of the use of the
medium by the universe for that medium, in an
average quarter-hour, and are commonly referred
to as viewing or listening levels.

Shares for both media have the same meaning, a
percentage of the users of the medium attributable
to a given station.

Television is a program medium.   Since people
watch programs, audience estimates are most
often cited for Television programs.   In commercial
network television, a quite successful program is
one that achieves an 18% average rating.   That
rating for a single program is slightly more than
the average quarter-hour rating for ALL radio
listening during the broadcast week, Monday-Sun-
day 6AM-Midnight, and is comparable to the total
weekly cume rating of a leading station in a

major market.

No single radio station can achieve the ratings
attributable to most television stations.   But, in
many ways, it's not even fair to make the compar-
ison.   The universes for the ratings are different;
the radio universe (persons) is about two-and-
one-half times the size of the television universe
(households).   The competitive marketplace is
different.   Consider the number of radio stations
available for selection by a listener versus the
number of television stations among which a
viewer may choose.   Television stations are only
just beginning to learn what it means to compete
among a multitude of stations for viewers.

Chapter Two

Survey Methodology

There are two national audience research firms
that employ different methodologies to report to
the broadcasting industry the basic audience esti-
mates. Arbitron favors the use of a diary to
capture radio listening, while Birch employs the
less expensive telephone recall methodology.

For both Arbitron and Birch, the survey process
begins with defining the geographic components of
the market to be measured. For each market,
Birch defines a single geography (normally a
Metro Area, but sometimes called a TSA if the
geography is larger than the standard government-
defined metropolitan area) for which audience
estimates will be reported. Arbitron may define
two or three geographies for a market that is
regularly scheduled for survey: Metro and TSA,
and sometimes ADI.

The methodological descriptions that follow are
based on descriptions, written in 1984, available
from each of the ratings companies. Arbitron has
provided some written updates to its procedures
since then. Both services are constantly reviewing
their methodologies for improvements and to
increase acceptability by users. Therefore, the
following descriptions are subject to change in
the future. And in fact, some of the details
based on 1984 descriptions may not totally reflect
the methodology as of 1986.

Arbitron's Diary Methodology

Sample Size

For each market to be surveyed, Arbitron has
established an Effective Sample Base Goal for
each geography. This goal is the projected size
of a simple random sample required to generate
Total 12+ Cume Persons estimates without any
sampling error outside of that normally associated
with a simple random sample design. The factors
determining the Goal are:

   Radio Market Report Type: a "standard" radio
   market report, or a "condensed" version. While
   the standard report includes a wide array of
   demographics and dayparts, the condensed ver-
   sion of the market report includes only very
   broad demographics for limited dayparts. Be-
   cause less refined audience estimates are pub-
   lished in a condensed market report, the sample
   goal for this market type is always smaller than
   for a standard market.

   Population: the Sample Goal established for
   each market is dependent upon the Metro popu-
   lation size of that market relative to all other
   markets. The most populous metro areas are as-
   signed the largest sample goals.

Metro Sample Base Goals for the Standard Market
Report markets range from 550 to 4000 diaries;
for Condensed Market Report markets, the range
is from 250 to 450 diaries. TSA Sample Base
Goals range from 10% to 40% larger than the
corresponding Metro Goal. ADI Sample Base
Goals are always the same as those established
for the Metro. ADI Goals are established when-
ever the Radio Metro is a major metropolitan area
within a Top 50 Television ADI. In addition,
during the Spring Quarterly survey, ADI Goals are
established for ADI survey areas, in ADI's ranked

from 51 through 100.[1]

These Sample Base Goals reflect the minimum
Effective Sample Base that Arbitron wishes to
achieve for the reported market geography. The
Goals are then converted to sample size require-
ments for the Metro, the Non-Metro TSA, and the
ADI. The sample size requirement for each geo-
graphy can then be allocated across the counties
(as defined by Arbitron) that comprise that geo-
graphy in relation to the population size of each
county.

Because the TSA Sample Base Goal is only a small
percentage larger than the Metro Goal, the sample
size requirement for the Non-Metro TSA is always
less than that required for the Metro. It is Arbi-
tron's intention to measure listening to those
stations licensed to the Metro Survey Area, and
therefore, plans that the Metro Survey Area will
be oversampled in relation to the total market.
[As one travels farther and farther from the Metro
area, listening to a metro station is less likely.
Arbitron does not place a lot of diaries in Peoria
to measure listening to Chicago stations.]

Many counties appear in more than one market.
A sample size allocation for a county is done for
each market to which it is assigned. The largest
of the different allocated sample sizes is always
used to determine diary placement.

Once Arbitron determines how many diaries are
required for each county, it can then determine

---

[1]Audience estimates based on ADI's outside
of the Top 50 are currently not reported in the
Arbitron Market Report. The annual "extra sam-
ple" placement in ADI's ranked 51-100 occurs to
provide the intab base for processing national
network audience estimates. While access to
audience estimates for ADI's ranked 51-100 is not
available from the market report, it is available
from other Arbitron products, including AID.

how much sample to select to retrieve those
diaries, based on historical sample retrieval rates
for that county. Some percentage of the sample
households will consent to participate in a survey;
and only some of the persons from some of the
consenting households will actually return diaries.

Sample Selection and Participation

Sample is selected from telephone directory listings
supplied by Metro-Mail Incorporated, from which
known non-residence telephone numbers have been
purged. The interval selection technique employed
allows sample selection proportionate to the num-
ber of listed telephone households in a zip code.

For counties located in Metro Survey Areas, sample
is also selected for households not listed in tele-
phone directories (or listed without addresses).
The interval selection technique is applied to a
bank of probable working household phone numbers
that are not fully listed in directories. The per-
cent of the Metro Sample that was designed to be
selected via what Arbitron calls its "Expanded
Sample Frame" (ESF) is noted on the Special
Notices Page of each Market Report. The percents
of unlisted households range from none (Cape
Cod, MA) to over 60% (Las Vegas) currently and
are evaluated every year as updated population and
telephone directory listings become available.

The selected sample is randomly assigned to one
of the weeks to be included in the survey. Each
week receives an equal sample allocation.[2] Ap-
proximately four weeks prior to the start of the
survey week, a telephone interviewer contacts the

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[2]During the survey process, if Arbitron
projects that diary return will not approach the
established goals, it may "buffer" the sample (ie.,
add extra sample) in the later weeks of the survey
period in an attempt to meet those goals.

sample household to solicit participation in the survey. The interviewer must determine how many persons 12 years or older reside in the household and, in those Metro Areas that have been designated for "Ethnic Control" (Black and/or Hispanic), the ethnic group classification of the household. In some instances, the interviewer also determines if the household includes a member of a low response age group (ie., Men 18-34).[a] The interviewer must also ascertain if any household member has broadcast industry affiliations; if so, the household is not eligible for survey participation.

All households that have consented to participate in the survey are mailed diaries -- one for each person in the household 12 or older. Monetary inducements to participate are included with the diary and/or in follow-up letters. The size of the inducement will differ based on: whether the household is a listed telephone household or selected via the ESF technique; the ethnic group to which the household belongs; whether the household includes a member of a low response age group; whether the household resides in a Metro or Non-Metro area; and whether the household resides in an area that has historically shown high or low response.

The diaries are mailed to arrive at the household a day or two before the survey week commences. Recording of listening for that week always begins on a Thursday and terminates the following Wednesday. After the completion of the survey week, the diarykeepers are instructed to return their diaries to Arbitron.

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[a] The age group question is currently only asked of Black respondents, but based on results of recent Arbitron Research studies, may be expanded to include all participating households to determine if a Male 18-24 resides in the household before the diaries are mailed.

Figure 2.1
A Page from an Arbitron Diary

Be sure to fill in both the starting and ending times each time you listen
to the radio.

On each page of the diary, one for each day, there are
lines for thirteen listening entries. Respondents who
need more space write between the lines, while those who
did not listen use the checkoff box at the bottom of the
page.   Each listening entry is identified by a start and
end time (left columns), as well as a checkoff of where
the listening occurred (right columns).   The center column
is where the diarykeeper records the call letters of the
station, or some other identifier if the call letters are
unknown.   Eighty-five percent of all entries include call
letters.   Another 10% are slogan id's, while 3.4% are
entries that identify a station by frequency only.   The
remainder are network, program or personality names.

Effective Summer 1986, Arbitron is modifying its diary
layout to delineate time blocks (eg., 5AM-10AM and 10AM-
3PM) on each page to help eliminate AM/PM diarykeeper
confusion.

Returned Diary Processing

All diaries returned to Arbitron are verified for
usability.   Diaries that are received a certain
number of days after the end of the survey week
are eliminated, as are diaries for which the return
postmark is earlier than the day after the last
day of the survey week.   Some entry must appear
for each survey day, even if only a check-off of
the "no listening" box; incompletely filled in
diaries are rejected from the sample.

An attempt is made to assign all non-call letter
entries to call letters.   Non-call letter entries can
include a slogan identifier, or a frequency, or a
program name, a personality, a sports team, a
network affiliation.   These non-call letter entries
are compared to the information that stations,
that cover the county from which the diary was
returned, are asked to supply prior to the start
of each survey period via the Station Information
Packet.   If a single match can be found, the
listening is assigned to the matching call letters.
If no station submitted a match for the non-call
letter entry, then the entry is assigned to Uniden-
tified Listening (UUUU).   If the entry matches
information from more than one station, assignment
of that entry to one of the stations is made via
an ascription technique that includes a probability
determination, based on a comparative history of
diary mentions.

Every call letter entry undergoes a legal and a
logical check, ie., does the station exist and is
listening to the station logical for the county
from which the diary was returned?   If the call
letters in a diary do not match any of the logical
call letters, an attempt is made to assign those
call letters to a logical set.   For example, an
entry of WMFE-AM in Orlando, home of station
WMFE-FM, would be assigned to WMFE-FM on
the basis of AM/FM confusion, as could an entry
of WMEF-FM (call letter reversal) or WNFE-FM
(phonetic sound alike).   Once again, if multiple
matches of call letters can be made, reassignment

to a single set of call letters is performed via the
probability ascription technique. If the illogical
call letters cannot be matched to any logical set
of call letters, they are retained in their illogical
state.

All diaries are checked for "excessive listening".
Any diary that exceeds Arbitron-established (con-
fidential) thresholds is eliminated from the sample.

Once all diaries returned for a market have under-
gone the above usability and call letter edits, the
(usable) intab diaries are weighted to reflect the
distribution of the population universe they repre-
sent. Arbitron's weighting process is called Sample
Balancing. The purpose of the Sample Balancing
system is to minimize the bias that could result
from a sample whose distribution does not match
the universe distribution exactly. Each market is
divided into sub-universes defined by geographic
area and sometimes Ethnic Group. For example,
Metro diaries are a universe unique from Non-
Metro diaries. Black Metro diaries may be a
universe unique from Non-Black Metro diaries, in
markets that qualify for Black Ethnic Group con-
trol.

In each sub-universe, Arbitron divides the popula-
tion and sample among discrete sex/age groups.
The population of each demographic is some per-
cent of the Total 12+ population for that sub-
universe. The intab for each demographic group
is some percent of the Total 12+ intab for that
sub-universe. Determining the deviation between
the two percents for each sex/age group results
in an intab weight for that group. Intab weights
are also computed for each geographic component
(individual counties, or portions or counties, or,
in some instances, combinations of counties/por-
tions of counties). If the market qualifies for
Ethnic Group control, and the controlled Ethnic
Group is not a unique sub-universe, Arbitron
controls for the distribution of the intab among
Ethnic Groups just as it does for sex/age groups

or geographic components.*

Because application of the geographic (and Ethnic Group) adjustments may have affected the adjusted sex/age intab weights, the process repeats multiple times until the adjustments are so minuscule that they are considered to be "no change." The result of this iterative sample adjustment process is a final weight assigned to each "cell" (ie., the applicable sex/age group, geographic component and Ethnic Group). These weights, commonly referred to as the Persons-Per-Diary-Values, or PPDVs, are used to project the audience estimates for a market report.

Minimum Reporting Standards

In order to qualify for inclusion in an Arbitron Market Report for a given market in a given survey, a station must meet certain criteria. The audience criteria are applied for the Metro Survey Area for inclusion in the Metro/TSA section of the market report, and for the ADI for inclusion in the ADI section of the market report, if applicable.

   1) The station must be "commercial". That is, according to Arbitron, it must "engage in systematic regular commercial broadcasting pursuant to the authority of and the Rules and Regulations of the Federal Communication Commission or other appropriate governmental authority."

   2) The station must not be Cable Originated.

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*Sometime during 1987, Arbitron plans to implement a new weighting variable, the survey month from which the diary was returned, whenever more than one survey month is included in the report, to adjust for unequal distribution of the intab across survey months.

3) The station must be recorded in a minimum
of 10 usable intab diaries and achieve of Cume
Rating among Persons 12+ of 1.0%.[5]

4) The station must achieve a .05% Average
Quarter-Hour Rating among Persons 12+, Mon-
day-Sunday 6AM-Midnight.

Stations that are simulcast for all or a portion of
their broadcast schedule have special criteria
applied for inclusion in the Market Report.

[That Arbitron excludes non-commercial radio
stations from its market reports has been of some
concern to public broadcasters. When Arbitron
first began measuring radio, audience estimates
were thought of (and many times, are still thought
of) primarily as a sales tool so there was no
reason for Arbitron to include, in their market
reports, radio stations that did not sell advertising
time. And frankly, most public stations would not
have qualified for inclusion, based on the minimum
criteria. But public radio has grown; many, but
not all, public stations meet the standard reporting
criteria for their market. In addition, utilization
of audience estimates has developed into something
much more than selling commercial time.

[So should non-commercial stations that can meet
the normal reporting standards be included in
Arbitron's reports? The RRC thinks not. The
cost of subscribing to the service is only one of
the reasons. Even if Arbitron followed Birch's
rule of 50% of the commercial station rate, the
minimum cost of subscribing would be large for
every public station. In addition, the reported
estimates for public stations would be provided to
all Arbitron subscribers. Giving away such infor-

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[5]The Cume Rating criteria is a new one,
effective with the Winter 1986 survey period. In
prior surveys, stations had to be recorded in a
minimum of 10 intab diaries or in 1% of the Sam-
ple Target, whichever was greater.

mation could only improve the competition.]

Birch's Telephone Methodology

Much of the Birch methodology is patterned after that employed by Arbitron. Sample is allocated, selected, retrieved, edited and weighted to project audience estimates. But the survey participation process is totally different.

Only one person, 12 years of age or older, in a household is asked to participate via telephone in the survey. The survey interviewer, upon gaining consent, determines the respondent's radio listening between 6AM and 3PM of the day of the telephone call, and from 3PM to Midnight of the day before the telephone call. In this 24 hour recall portion of the survey, the interviewer determines the call letters listened to, the start and stop time of listening, as well as where the listening occurred (home, car, or some other place). Then the inter-viewer asks the respondent to recall all stations listened to in the past week. In addition to the respondent's listening habits, the interviewer obtains the zip code and county of residence as well as the race of the respondent. In certain markets, the interviewer also solicits responses regarding product usage and socio-economic status.

Because of the single-person-per-household and 24 hour recall methodologies, the sample selection process for Birch is somewhat different than for Arbitron. Both services select a sample of house-holds to participate. While Arbitron divides its sample across all of the weeks in the survey, Birch divides it sample across weeks in the survey and then days in the week. Where Arbitron counts each person 12+ in a consenting household as a potential respondent, Birch only solicits coopera-tion from one person in the household, selected, via a random number procedure, at the time of the phone call. This latter process also requires an additional sample weighting control that is

unique to Birch, a control based on the probability of selecting a specific respondent in the household, given the size of the household.

Because of the interviewer/respondent contact during the retrieval of radio listening, many of the non-call letter and illogical or illegal call letter responses of the participant can be clarified over the telephone.

Birch versus Arbitron

Each of the ratings services employ different methodologies that impact not only their processing of the listening data but the actual audience projections that they publish. Below is a list of some of the differences between the methodologies, and an RRC opinion, on the impact of that methodology.

Single-Person (Birch) versus All Household Members (Arbitron): advantage Birch. Arbitron's all-household-member methodology results in clustered sampling. Given equal starting sample sizes, Birch is sampling more "points" than Arbitron.

24 Hour Telephone Recall (Birch) versus Diary (Arbitron): advantage Arbitron, to the extent that its respondents record listening as it occurs or in recall increments of less than 24 hours.

Past Week Telephone Recall (Birch) versus Seven-Day Diary (Arbitron): advantage Arbitron, to the extent that its respondents record listening as it occurs or in recall increments of less than one week. The past week recall methodology, besides being suspect in its ability to retrieve listening to stations that are only occasionally tuned in, does not allow easy tabulation of average week cumes for dayparts that are smaller than the broadcast week. Average week Monday-Friday or Weekend daypart cumes

must be determined by mathematical manipulation
of the past week and 24 hour recall cumes
since Birch does not collect details of listening
beyond that listening reported for the past 24
hours.

Telephone (Birch) versus Diary (Arbitron):
advantage Birch or Arbitron, to the extent that
either methodology will obtain a higher response
rate from a given portion of the population
thereby minimizing the non-response bias of the
sample.   In general, Birch appears to do a better
job of obtaining response from the more transi-
tory age-groups of the population (eg., 18-24
year olds).   Arbitron has problems obtaining
response from these same population segments,
and thus its sample is more likely to be biased
against those stations that are most listened to
by those population segments.   The diary tech-
nique also places certain literacy requirements
on the respondent.

Number of Survey Weeks: advantage Arbitron.
Birch performs its surveys during either the
first two weeks of the survey month or the last
two, depending upon the size of the market.
Arbitron consistently surveys during all four
weeks of a survey month.   The spread of the
sample across more weeks allows Arbitron a
better chance at elimination of bias due to
differences in listening behavior in different
weeks (eg., different weather conditions or
newsworthy events in one week versus another).
The measurement of all surveyed markets at the
same time affords Arbitron report users the
ability to effectively compare audience estimates
across markets.

Editing of Respondent-Supplied Listening Data:
advantage Birch or Arbitron.   While Arbitron
utilizes remote-point editing to clarify listening
entries without soliciting any clarification from
the actual respondent, Birch performs some
clarifications while on the phone with the re-
spondent.   The latter technique requires a skill-

ful interviewer to preempt any possibility of
aiding the respondent recall. It also requires
on the part of the interviewer, some pre-knowl-
edge of the potential stations that a respondent
may listen to. That potential roster of stations
may be incomplete, particularly when Birch first
begins to measure a market. Arbitron's tech-
nique, on the other hand, is dependent on the
probability of a listener response, rather than
on an actual response. Like Birch's, its tech-
nique is subject to human error. The smaller
the amount of editing of listening responses
that is required, the more acceptable the meth-
odology.

Both services supply monthly (rolling average) and
quarterly audience reports to their subscribers.
Birch Monthly reports are a rolling average of
two months of survey data (four survey weeks);
their Quarterly reports are the compilation of six
survey weeks across three months. Arbitron
Monthly reports (available currently to only com-
mercial subscribers) are a rolling average of three
months of survey data (twelve survey weeks);
their Quarterly reports are also the compilations
of twelve survey weeks of data; every third
monthly rolling average report is actually the
Quarterly report.

In some markets, in semi-annual reports, Birch
reports listening behavior among different socio-
economic groups instead of the standard sex-age
groups and parallel listening and product usage
behavior. These reports can be extremely useful
in gaining an understanding of who the listeners
are, as long as the methodology utilized in ascrib-
ing these respondent attributes is clearly under-
stood‘, and are a definite advantage of the Birch

‘Not all respondents across all months in-
cluded in the semi-annual report are asked the
same questions. In addition, not all respondents
will answer all of the questions.

service.

Birch also has the ability to deliver audience estimates to its subscribers more quickly. Because surveys in different size markets are performed at different times of the month, report processing can be graduated. The telephone methodology allows inherently quicker delivery too. Report tabulation can begin as soon as the last telephone interview is recorded. Arbitron must wait for diaries to be returned in the mail and does not begin processing reports until two weeks after the end of the survey period.

One of Birch's alleged advantages is that its reported audience estimates are based on much longer time spent listening per respondent. High listening levels are good for radio as a commercial medium. And higher listening levels are claimed to be a product of Birch's telephone methodology. What's interesting, however, is that Arbitron's listening levels have increased since it dropped use of telephone recall of its Black respondents several years ago, suggesting that Birch's higher listening levels are more a function of response/-non-response bias or something else in the survey process rather than its telephone methodology, in particular.

Arbitron, once a year, surveys the entire country, something that Birch has not attempted. This national survey allows Arbitron to provide audience projections at the national level (or broad regional levels) for use by wired and unwired networks.

Arbitron is very open about its methodology. One survey per year is audited by an independent firm to assure the broadcasting industry that it is producing its audience projections utilizing its written and publicized methodologies. Birch has yet to cross this threshold, but may be required to if it expects to gain wider advertiser/agency acceptance.

The RRC currently only processes and analyzes

Arbitron audience data.   Arbitron's methodology
is, in our opinion, more useful for audience esti-
mate subscribers for the following reasons:

1) The seven-day diary methodology captures
more detailed listening information from each
respondent allowing more refined examinations
of the data than the 24 hour recall methodol-
ogy.   Since Birch only investigates listening
details for a 24 hour period, it is impossible to
trace listener behavior patterns over the course
of a few days or a week without resorting to a
multitude of assumptions.

2) Arbitron methodology typically includes a
larger geographic measurement.   Audience esti-
mates are available for stations for a Metro
Survey Area and for a Total Survey Area and/or
for an ADI survey area.   .

3) Arbitron surveys a greater number of markets
and the survey periods across markets are com-
mon, (ie., all markets surveyed for the Spring
Quarterly are surveyed at the same time) allow-
ing the compilation and analysis of audience
data across markets.   Station estimates and
trends at the local level can be compared to
national estimates and trends.

4) Arbitron can normally produce custom geo-
graphy reports (based on Primary Signal Areas)
because it places sample nationwide during the
Spring Quarter, making audience estimates avail-
able to stations not located in "measured mar-
kets."

5) Arbitron measures radio use for 24 hours
including overnight and early morning listening
instead of just the time period between 6AM
and Midnight.

While both research services provide rich and
useful data, they cannot be used in combination
with each other because of the different method-

ologies.   Use Arbitron data or use Birch data, to
establish a history of audience estimates for your
station against which future projections can be
compared to measure growth (or lack of it), but
never try to mix the two sets of data.

The RRC prefers to use Arbitron data and the
rest of this primer will refer to the reports and
audience projections that Arbitron publishes.
Although all examples will refer to Arbitron report
pages or audience estimates, most of the data
extrapolations (eg., TSL, Turnover, Composition)
are appropriate tools for analyzing audience esti-
mates from any research service.

Undertaking Your Own Audience Research

A review of the above descriptions of the survey
process should reinforce the fact that performing
an audience survey, without professional guidance,
is a complicated undertaking.   Textbooks abound
on the subject.

The problems only start with establishing the
sample frame itself.   Establishing whether the
sample frame should be the full population, or
telephone households, or listed telephone house-
holds is a critical starting point, prior to random
selection of sample, that will affect the results.
The contents of the survey instrument, normally a
questionnaire, are extremely important, as is the
administration of the instrument.   Not everyone
selected for survey participation will participate.
This requires that the returns be weighted to
correct for disproportionateness by those charac-
teristics that are important to listening behavior
classifications.   Yet, too much reliance on weight-
ing, creating too many control variables, can also
distort the results.   Tabulation and reporting of
the results, after weighting, is actually the sim-
plest part of the whole process.

Our advice is, quite simply, let professionals per-

form audience surveys.   Local and regional mar-
keting research firms can assist where the national
firms do not provide an adequate service.   No
matter who performs the survey, be aware of the
methodology they employ.   All survey methodolo-
gies have limitations (if only due to trade-offs
because of cost) that should be understood, to
place the survey results in proper perspective.

Membership surveys are not audience surveys.
The sample frame is so limited that you cannot
consider such surveys as a sampling of your sta-
tion's listeners.   While they may be of use in
determining the needs and wants of those people
who have financially supported your station, they
tell you nothing about the needs of those who
have not contributed.   Since this latter group is,
by far, the majority of your station's audience, the
value of membership surveys is inherently limited.

Chapter Three

The Radio Audience

How People Use the Medium

In order to understand the meaning of audience research data available for stations, a standard of comparison is necessary. A basic tool for making comparisons is the data which identify how people across the country use radio in their daily lives. Because programmers can do very little to influence the way in which people use radio in general, it is imperative to know how much of the potential audience is available to listen throughout the day.

The Spring 1985 Arbitron National Audience Estimates[1] report projects that 95% of all persons 12 or older listen to radio sometime during an average week, 6AM-Midnight. These listeners use radio an average of 24 hours per week. The average listener tunes in to either 2 or 3 stations per week.[2] A tabulation of 1982 survey data

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[1]National Audience Estimates, Spring 1985 Prepared for the Corporation for Public Broadcasting by the Arbitron Ratings Company, 1985.

[2]Radio Today, 1983 Edition, based on Spring and Fall 1981 survey data. Compiled by WRG Walrus Research and Published by the Arbitron Ratings Company, 1983.

projected that 92% of all radio users listen at
home, 81% listen in a car, and 75% listen some-
place besides at home or in a car during an aver-
age week.[3]

These typical listeners are pretty much the same
across the country, regardless of geographic re-
gion. Radio use is a reflection of lifestyle, and
the majority of people spend their weekday in the
same way: get up in the morning, go to school or
work during the day, arrive home late afternoon
or early evening, watch some television, and
eventually go to bed. These living patterns are
reflected in the way radio is used -- heaviest in
the morning, another peak late afternoon, and
tapering off throughout the evening and night as
alternative media are explored. Weekend radio
use is different from that of weekdays, once
again, due to the unique characteristics of the
weekend lifestyle.

The curve of typical radio use, from 4AM through
Midnight, for Persons 12+ is displayed in Figure
3.1.[4] Weekday listening begins to increase starting
about 4:30AM peaking between 7 and 9AM, grad-
ually declining until mid-afternoon, when use
begins to rise again with another small peak
between 4 and 6PM. Then radio listening tapers
off throughout the nighttime hours. Not shown
on the graph is that the tapering off lasts until
about 2AM, when radio listening stays flat until
the 4:30AM rise.

Saturday radio use begins to increase later than
during the week and at a somewhat lower rate.
The peak is between 10AM and Noon. Listening
tapers off, slowly at first, and then faster after

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[3]*Radio Today,* 1984 Edition, based on Fall
1982 survey data. Compiled by WRG Walrus Re-
search and Published by the Arbitron Ratings
Company, 1984.

[4]*Ibid.*

4PM.   The Sunday radio use curve is very similar
to the Saturday usage curve; but, there's less
radio listening during any part of the day.

Figure 3.1
Listening to Radio Throughout the Day

PERSONS 12+ USING RADIO

HOUR-BY-HOUR

—□— MON-FRI   —●— SATURDAY   —◇— SUNDAY
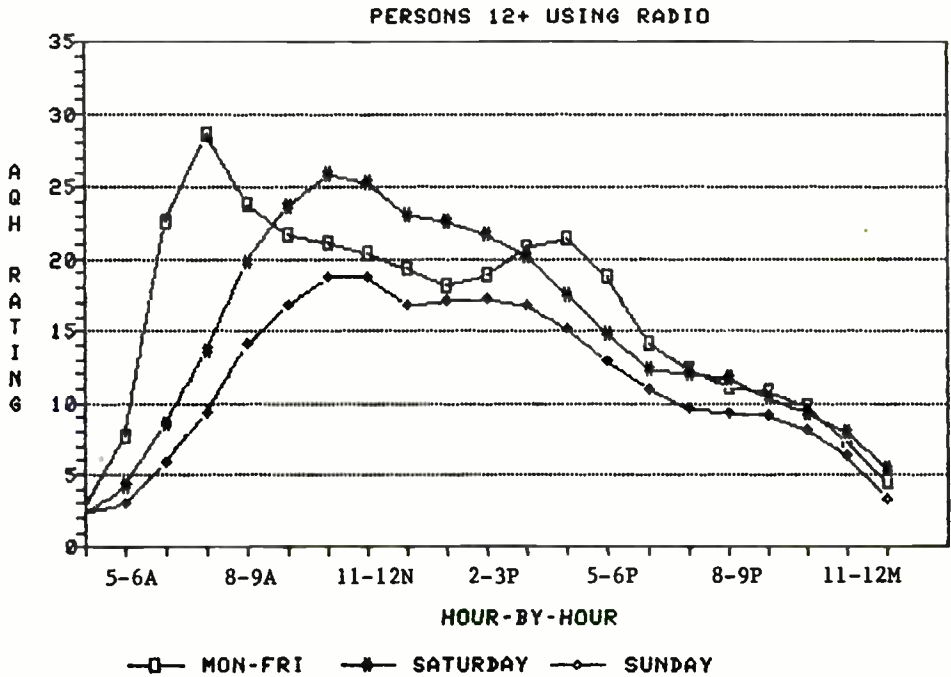
Knowing how people use radio allows programmers
the opportunity to know when audience is avail-
able.   Radio Prime Time for Persons 12+, based on
these listening curves, is Monday-Friday 6AM-
6PM, Saturday 9AM-4PM, and Sunday 9AM-3PM.
These are the times when the potential audience
for any given station is the greatest.   Therefore,
it behooves programmers who want to maximize
audience to program their best offerings, of

broadest appeal, during these time periods.   These
are when the audience is available to listen, and
will listen, if they can find appealing programming.

Radio Use by Location of Listening

It may be helpful to know where people are
listening when they listen, whether it's at home or
away from home (in-car or some other place).

Figure 3.2
Listening to Radio At-Home versus Away-from-Home

Persons 12+, Monday-Friday
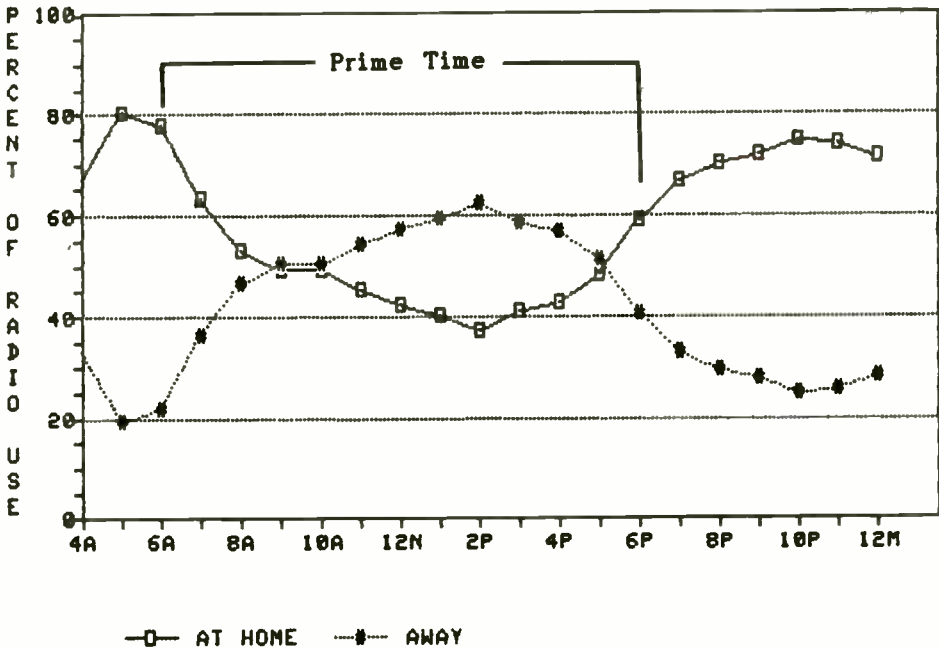
During non-Prime Time, radio use is most likely
to be an at-home activity. Between 60% and 80%
of all radio listening Monday-Friday 6P-Midnight,
Saturday 4P-Midnight, and Sunday 3P-Midnight is
done at home. Weekend Prime Time hours are also
dominated by at-home listening. Once again,
between 60% and 80% of the listeners are at-home
while listening. These listeners are most likely to
be at-home in the earliest of the Prime Time hours
with a migration to in-car listening as the after-
noon progresses.

Location of listening during Weekday Prime Time
hours is much more variant hour-by-hour. The
graph on the facing page (Figure 3.2) shows that
at 6AM, 78% of all radio use is at-home. By
9AM, radio use is evenly split at-home and away.
The percent at-home declines the rest of the
morning and early afternoon, bottoming out at
less than 40% at 2PM. Then, percent at-home
rises gradually until, at 6PM, 60% of all listeners
are at-home. The percent of away-from-home
listening is obviously the inverse of the at-home
curve.

What is interesting is the level of in-car listening,
as a percent of radio use, throughout the bulk of
radio's Weekday Prime Time Hours, displayed in
Figure 3.3. Between 16% and 25% of all listening
is in-car from 8AM to about 3PM. Then the
percentage jumps, at 4PM, to one-third of all
listening and holds at that level until nearly 6PM.
Note that the 4PM jump is also the beginning of
the late afternoon listening peak. It appears that
the increase in in-car listening at that time is a
cause of the increase in radio listening.

Since in-car percent of listening is fairly low
throughout many of the Weekday Prime Time
Hours, the percent of radio use attributable to
listening in some other place away-from-home
must be quite high. Not surprisingly, percent of
listening in some other place peaks at 2PM (39%
of all radio listeners), when percent using radio
at-home is at its lowest. When percent using

radio at-home is at its highest at 6AM, the per-
cent of listening in some other place is at its
lowest, about 3%.

Figure 3.3
Listening to Radio In-Car versus Some-Other-Place

Persons 12+, Monday-Friday
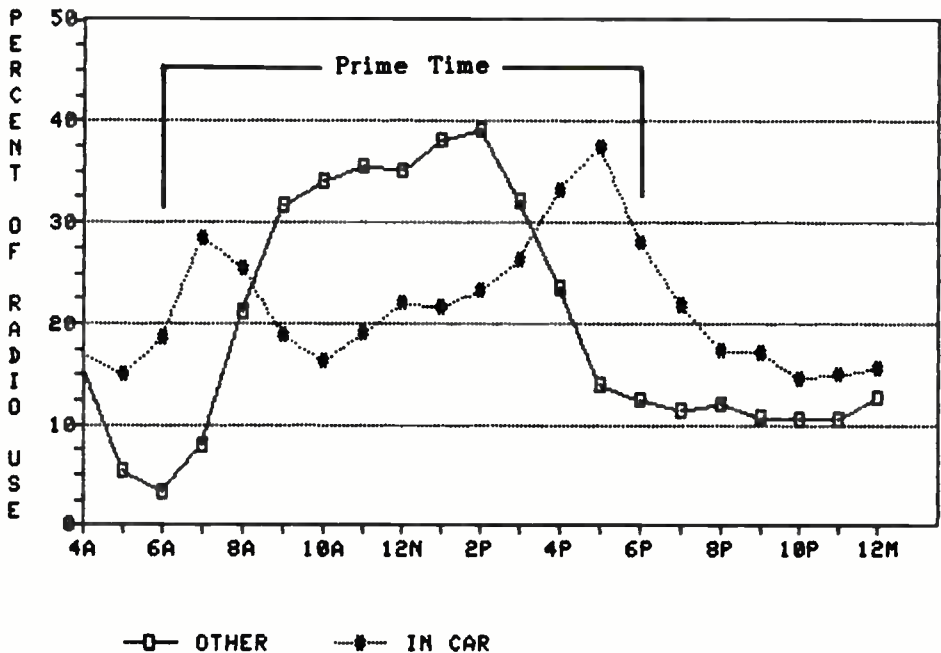
Failure to reach a sizable audience during Weekday
Prime Time hours, may be caused by a failure to
provide programming that is appealing and relevant
based on location of listening.   Between 9AM and
5PM, less than 50% of all listening occurs at-
home.   Between 9AM and 4PM, away-from-home
listening is most likely to be in some-other-place,
rather than in-car.   A decline in audience during

those midday hours that exceeds the expected
decline due to lowered radio use, is very likely
the result of providing programming that is not
appealing to the some-other-place audience, there-
by eliminating a sizable segment of the potential
audience.

Radio Use by Demographic

Since 1977, Arbitron has compiled National Audi-
ence Estimates based on the Spring survey period
for the Corporation for Public Broadcasting. In-
cluded in the publication are demographic and
daypart breakdowns of radio use. National Public
Radio has tracked these national radio use esti-
mates by demographic and daypart since the Na-
tional Audience Estimates were first compiled for
CPB, and annually publishes the results. The
most recent release compares radio use based on
the Spring 1985 survey to previous Spring surveys.[5]

The radio use estimates reinforce the constancy
of the use of the radio medium over time, although
there are subtle changes by demographic and
daypart. About 95% of all Persons 12+ listen to
radio at least once a week; that estimate of radio
use has not changed since 1977. The demographic
most likely to tune in radio is Women 18-24 (98%)
followed closely by Women 25-34; once again, an
estimate that is unchanged since 1977. However,
the percent of the Men 18+ population that uses
radio once a week has increased slightly since
1977 (due to increased use by Men 25-54), while
the percent of Women 18+ has declined slightly
(due to decreased use by Women 45+).

Average Time Spent Listening to Radio, Monday-

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[5]*National Radio and NPR System Audience
Estimates, Trend Tables 1977-1985*. Published by
NPR Office of Audience Research and Program
Evaluation, January 1986.

Sunday 6A-Midnight, by Persons 12+ amounted to
nearly 24 hours per week during the Spring 1985
survey period, about the same as was reported in
1983 and 1984.   The demographic reporting the
longest TSL was Men 18-24, over 26 hours per
week; Teens reported the shortest length of tune-
in at 18.5 hours.   Women 18+ listen slightly longer
than Men 18+ but Men are closing the gap.   The
sex differential in 1985 was a half-hour; in 1977,
Women reported more than 2 hours longer listening
to radio then Men.   Average TSL by Men 25-34
has increased more than any other demographic
since 1977, up 23% (versus a 12+ increase of 14%).

Radio Use by Daypart

Of those who tune in radio at least once per
week, 99% will tune in sometime Monday-Friday
while 87% will listen on the Weekend, a constant
pattern over time.   But tune-in by daypart has
changed.   Table 3.1 shows the percent contribution
of each listed daypart cume to the total week
cume (daypart cume expressed as a percent of
Monday-Sunday 6A-Midnight cume), and an index
of change to 1977.

The Daypart Percent Contributions are not much
of a surprise; they reinforce the patterns shown
in the listening curve of hourly radio use.   Radio
users are more apt to tune in during the Monday-
Friday 6A-10A daypart than any other.   The most
critical Saturday daypart is 10A-3P; 10A-3P is
also the most important Sunday daypart.   But
note the varying rates of growth of daypart utili-
zation.   The Monday-Friday 10A-3P daypart is of
increased importance to radio users; they are
seven percent more likely to tune in during that
daypart than they had been in 1977.   Many of the
weekend dayparts are also becoming more impor-
tant to radio users.

Table 3.1
Daypart Contribution to Total Week Cume
Spring 1985, Total 12+
Continental United States

Daypart	Percent Contribution to Total Week	Index to 1977
M-F 6A-10A	88	101
M-F 10A-3P	73	107
M-F 3P-7P	81	103
M-F 7P-Mid	61	101
Sat 6A-10A	46	100
Sat 10A-3P	54	104
Sat 3P-7P	40	106
Sat 7P-Mid	28	109
Sun 6A-10A	35	110
Sun 10A-3P	46	102
Sun 3P-7P	33	104
Sun 7P-Mid	24	105

Another facet of daypart utilization by the cume is average length of tune-in by daypart, illustrated in Table 3.2, showing average time spent listening by the daypart cume, indexed to 1977, along with an efficiency percent for each daypart. The Daypart Efficiency Percent is the division of the total hours in the daypart (thereby reflecting the length of the daypart) by the hours actually spent listening to radio. This efficiency percent, therefore, is a reflection of daypart TSL to radio, adjusted for the potential amount of time available to listen. This allows a comparative standard for different TSL's across different length dayparts.

Table 3.2
Time Spent Listening by Daypart
Spring 1985, Total 12+
Continental United States

Daypart	Average TSL In Hours	Percent Daypart Efficiency	Index to 1977
M-F 6A-10A	6.1	30.5	109
M-F 10A-3P	7.9	31.6	116
M-F 3P-7P	5.1	25.5	111
M-F 7P-Mid	4.4	17.6	111
Sat 6A-10A	1.6	40.0	109
Sat 10A-3P	2.4	48.0	108
Sat 3P-7P	1.8	45.0	107
Sat 7P-Mid	1.9	38.0	114
Sun 6A-10A	1.6	40.0	109
Sun 10A-3P	2.2	44.0	107
Sun 3P-7P	1.8	45.0	105
Sun 7P-Mid	1.8	36.0	113

The Monday-Friday 10A-3P cume listens longer to that daypart than the cume for any other daypart. In addition, a comparison of the daypart efficiency percents shows that more of the available listening time is spent listening to radio by the cume during the Monday-Friday 10A-3P daypart than during any other Monday-Friday daypart. The Monday-Friday 6A-10A daypart is a close second. While TSL during the 10-3 daypart has exceeded the 6-10A TSL since 1977, it has not always been more efficient; the changeover occurred in 1981.

Midday time spent listening is increasing faster than for any other daypart. When you bear in

mind that this is also the Monday-Friday daypart
showing the most cume growth, you can begin to
sense that certain dynamics of radio use have
changed since 1977. That midday daypart is be-
coming an increasingly important component of
Prime Time radio.'

Average versus "Typical" Time Spent Listening

Based on Arbitron's National Audience Estimates,
we know that the average time spent listening to
radio, in an average week Monday-Sunday 6AM-
Midnight, is 24 hours. This average estimate,
though, tends to obscure the fact that different
people listen to radio for different lengths of
time.

Marketing Research studies on consumer utilization
of all different kinds of products consistently
come up with the same results: a small percentage
of the consumers account for the bulk of the
consumption. Radio as a product is no different.
Consumption is measured in time spent listening.
A small percent of the listeners will generate
most of the time spent listening.

'A caveat: Arbitron methodology has changed
since 1977, and methodological differences can
impact audience estimates. Increased TSL was a
direct result of Arbitron's dropping of telephone
recall of its Black respondents. But this method-
ological change does not explain all of the TSL
increase, especially by daypart. Arbitron's change-
over from a 4 week survey period to a 12 week
survey period in 1981, extending the Spring Quar-
terly survey period into mid-June probably had an
impact on listening by daypart. Once again,
though the change does not explain all of the
difference. M-F midday TSL grew more than that
for any other daypart even just looking at the
years from 1983 to 1985, when there were no
major changes in the survey process.

When Westinghouse studied radio use to develop
its Reach and Frequency estimator[7], it analyzed
radio listening in seven Group W markets. In
each market, radio users were segmented into five
equal groups, called quintiles, based on the amount
of time spent listening to radio. The 20% of
radio listeners that listened the most were grouped
in one quintile; a second 20% that didn't listen
quite as much as the first group were allocated to
the second quintile. The last 20% of radio users
were those that use the medium most infrequently.
Total hours of listening by each group was then
percented against the sum of all hours of listening
to the radio, to derive the contribution of each
equal cume segment to radio listening. Despite
the variety among the markets included in the
study (Boston, Chicago, Fort Wayne, Los Angeles,
New York, Philadelphia and Pittsburgh), there was
little variation in contribution to time spent
listening by the five segments across markets.

By averaging the data that Westinghouse compiled
across markets we can construct the following
table of radio listening:

Table 3.3
Expected Distribution of Listening to Radio

Quarter-Hour Contribution
to Total Radio Listening

1st Quintile	43% ------	Heaviest Users
2nd Quintile	27%	
3rd Quintile	16% ------	Typical Users
4th Quintile	10%	
5th Quintile	4% ------	Lightest Users

---

[7]See Chapter 11 for a discussion of Reach
and Frequency, including the Westinghouse model.

The heaviest users of radio, those who spend the longest time listening in an average week, contribute 43% of all of the quarter-hours spent listening to radio. The middle quintile of "typical" radio listeners listens for 16% of all of the quarter-hours spent listening to radio in an average week.

We can apply this expected distribution to the national average time spent listening, to present a clearer picture of how radio is actually used. Given average time spent listening of 24 hours per week (or 96 quarter-hours), we can compute the probable distribution of time spent listening by listener quintile segments:

Table 3.4
Average Time Spent Listening to Radio
by Listener Quintile Segment
Spring 1985, Total 12+
Continental United States

Estimated
Average TSL to Radio
in Quarter-Hours

1st Quintile	206	------ Heaviest Users
2nd Quintile	130	
3rd Quintile	77	------ Typical Users
4th Quintile	48	
5th Quintile	19	------ Lightest Users
Average	96 (24 Hours)	

Average Time Spent Listening to Radio of 24 Hours has been inflated by that 20% of the cume that report radio listening of over 50 hours per week. The "typical" radio listener is represented

by the third quintile of users who use radio
slightly more than 19 hours per week. The mid-
point of the third quintile (77 quarter-hours of
listening) is the median of radio use over an
average week. While the median expresses the
mid-point of time spent listening (50% of the
cume listens longer, while 50% listens less), the
average, or the mean, is affected by the amount
of listening at either end of the listening scale.

Because of the rules of product consumption,
average time spent listening to radio is always
higher than the time spent listening by those
listeners in the middle of the listening scale.

Chapter Four

Comparative Listening Data

National audience data as described in Chapter 3
allow stations to place their individual audience
estimates in a context of general radio use.
Additional contexts are also available, two of
which will be discussed in this chapter: aggre-
gated format data; and, aggregated non-commercial
station data. Both of these contexts allow stations
to review their audience estimates in light of how
other stations of a similar genre are performing.

Audience Estimates by Format

After each Arbitron Spring and Fall Quarterly
survey, James H. Duncan, Jr. tabulates estimates
from each local market report to publish "American
Radio". A portion of his compilations are devoted
to audience statistics for the average station
aggregated by format. The data cited in Table
4.1 are selected from the Spring 1985 edition of
that publication.[1]

Mr. Duncan has categorized metro listening for
each Arbitron-reported commercial station into
listening to one of twelve major formats, to com-
pute the average statistics for each format.

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[1]American Radio, Spring 1985 Report, by
James Duncan, Jr, 1985.

Stations that cannot be categorized by one of the
twelve are lumped into that miscellaneous category
called Other.   Both Jazz and Folk are miscellane-
ous because so few commercial stations specifically
program that music; therefore, those formats do
not appear in the averages shown on the next
page.

It will not surprise many that the Ethnic formats
are the most likely to be the longer listening
formats.   Nor is it a surprise that the Easy Listen-
ing format attracts long time spent listening.
What may be a surprise, since Classical is often
mentioned in the same breath with Beautiful Music
as a potential long listening grabber, is the poor
performance of the Classical format relative to
the others.   Commercial Classical stations exhibit,
on average, the shortest time spent listening and
are the least likely to retain a large percentage
of their listeners as exclusive.

The data displayed in Table 4.1 are not a one-time
phenomenon. The Spanish and Beautiful Music
formats have ranked one-two for three years
running.   During that same span (Spring 1983-
1985), Classical has always exhibited the shortest
average time spent listening.

There are two possible reasons for the overall
performance of a format: either, there is something
inherent in the format that attracts, or fails to
attract, a loyal audience; or, the execution of the
format by the stations that comprise it attracts,
or fails to attract, a loyal audience.   It is the
RRC's opinion that the performance of the Clas-
sical format is a function of commercial Classical
stations' execution of that format.   This suggests
that these stations do not represent good role
models for non-commercial Classical stations.

Table 4.1
Average Station by Format, Ranked by Average TSL
Spring 1985, Monday-Sunday 6AM-Midnight, Persons 12+

Format	Average TSL in Hours[2]	Turnover Ratio[3]	Percent Exclusive[4]
Spanish	13.8	9.1	13.8
Beautiful Music (EZ)	11.8	10.7	13.7
Black/Urban	11.3	11.2	11.1
Nostalgia	10.9	11.6	12.8
Country	10.8	11.8	15.9
Album Rock (AOR)	9.8	12.9	9.9
MOR/Variety	9.6	13.2	12.4
CHR/Contempory	8.8	14.4	10.2
AC/Soft Rock/Oldies	8.5	14.8	7.4
Religion/Gospel	8.5	14.9	8.8
News/Talk	8.3	15.2	8.6
Classical	7.7	16.2	6.8

[2]From Chapter 1, you will recall that average TSL is determined by multiplying the daypart AQH by the number of quarter-hours available in the daypart and dividing the result by the daypart Cume.

[3]Turnover is a quick computation (Cume audience for the daypart divided by the AQH for the daypart) indicating audience churn. It describes how many quarter-hours it takes to arrive at the cume, if each quarter-hour audience were unique. It is an inverse measure of TSL: as average TSL declines, Turnover increases.

[4]Percent Exclusive is computed by dividing the station's exclusive cume for the daypart (the cume that listens to that station and no other) by the station's total daypart cume. It is one of the measures of audience loyalty. Percent Exclusive tends to increase as average TSL increases, but there is not a direct relationship. The exclusive cume may include a sizable concentration of light users of the medium (they only use one station because they do not listen to much radio), so that a high exclusive cume might drag down average TSL.

What the data in the format table provide is a
standard against which stations of a similar format
can compare themselves. Fine Arts stations have
a composite Classical station to look at. Public
radio stations that are primarily News and
Information can use the News/Talk format as a
standard. Stations programming nostalgic jazz
might want to use the Nostalgia format for
comparison while Urban Jazz stations might select
the Black/Urban format as a comparative measure.
The comparative measure allows you the knowledge
that your station is performing better, or worse,
than the typical commercial station that programs
a similar format.

Aggregated Public Radio Audience Estimates

After the major quarterly surveys, the RRC pro-
vides its members with audience data that present
a composite picture of the audience estimates
generated for individual non-commercial stations.
The graphs of Hour-by-Hour estimates for the
most recent survey indicate the listening curve
for non-commercial members, trended over a
couple of years, to which individual stations can
compare their own audience estimates. A station
for whom the survey estimates indicate a weak
morning performance, for example, has cause for
concern, if the aggregated non-commercial stations
have shown strong morning performance.

In addition, the RRC publishes CPB-Qualified
Station Rankings. These allow stations of similar
market size to compare relative performance.

The same NPR publication that describes trends in
radio use from 1977 on also describes use of
NPR-affiliated stations, based on Arbitron's Nation-
al Audience Estimates report. Utilization of NPR
member stations, by demographic and daypart, is
compiled annually, allowing easy comparison of

NPR-member use and radio use.[5]

The Spring 1985 NPR Cume Rating is 4.6%. This rating is double that reported in 1977. Growth has not been consistent year to year. The major cume rating increases of 1981 (up 24% over 1980) and 1982 (up 16% over 1981) have slowed to a trickle, and in 1984 actually turned negative.

Men, with a Cume Rating of 5.7%, are more likely to listen to an NPR station than Women (4.5%). Men 35-44 are the most likely to listen, as 7.1% tune in to an NPR station at least once per week. All of the Male discrete demographics (18-24, 25-34, etc.) are more likely to listen than their female counterparts. When we recall that Women are more likely to tune in radio at least once a week than Men, the importance of Males to the NPR station audience becomes even more evident. A computation that results in the percent of radio cume that uses NPR stations illustrates the difference.

From Table 4.2, we can note that older females are more likely to listen to an NPR station than younger females. Since older females are less likely to be radio users, the NPR percent of Radio Cume increases faster than cume ratings as we examine the older demographics.

When the 1985 NPR Cume Ratings by Demographic are indexed to 1977, different rates of growth by demographic are evident. The Cume Rating for Men 35-44 has increased the most, up 144% since 1977. Men 18-24 has increased the least, only 20% in 8 years. This is even less than the Teen growth rate of 51% since '77. NPR listening as a percent of population has increased faster among young Women (18-24 and 25-34) than young Men.

The rate of growth among older Men is faster
than among older Women. The demographic com-
position of NPR affiliated stations has changed
since 1977, and not necessarily in the same direc-
tion that the composition of the population has
changed.

Table 4.2
NPR Cume Ratings by Demographic
(Ratings Expressed as Percents)
Spring 1985, Monday-Sunday 6AM-Midnight
Continental United States

Demographic	NPR Cume Rating	NPR Cume as a Percent of Radio Cume	NPR Cume Rtg Index to 1977
Total Persons 12+	4.6	4.8	201
Men 18+	5.7	6.0	202
Women 18+	4.5	4.7	192
Teens	1.0	1.0	151
Men 18-24	2.7	2.8	120
Men 25-34	6.2	6.4	205
Men 35-44	7.1	7.4	244
Men 45-54	6.6	7.0	232
Men 55-64	6.1	6.5	215
Women 18-24	2.0	2.1	160
Women 25-34	4.7	4.8	209
Women 35-44	4.9	5.1	233
Women 45-54	5.0	5.2	192
Women 55-64	5.1	5.4	202

Daypart utilization of NPR stations by the NPR
cume has changed too, and again, not quite in the
same way that use of radio by daypart has
changed. Table 4.3 displays the percent of the

NPR Cume that tunes in at least once to the
listed daypart, the NPR Daypart Cume expressed
as a percent of the Radio Daypart Cume, and an
Index of Change of this percent since 1977. This
last column adjusts for the differences in radio
use over time that were noted in Chapter 3.

Table 4.3
Daypart Contribution to NPR Total Week Cume
Spring 1985, Total 12+
Continental United States

Daypart	Pct Contribution to NPR Total Week	NPR Cume as a Pct of Radio Cume	Pct of Radio Index to 1977
M-F 6A-10A	50	2.8	255
M-F 10A-3P	41	2.7	193
M-F 3P-7P	51	3.0	231
M-F 7P-Mid	33	2.7	193
Sat 6A-10A	16	1.7	283
Sat 10A-3P	20	1.8	225
Sat 3P-7P	22	2.6	325
Sat 7P-Mid	17	2.9	322
Sun 6A-10A	15	2.1	210
Sun 10A-3P	18	1.9	190
Sun 3P-7P	12	1.8	225
Sun 7P-Mid	10	2.0	182

If the programming that NPR stations offered
their audience was equally appealing across day-
parts to the radio users of those dayparts, then
the NPR percent of Radio Cume for each of the
dayparts would be the same. While the appeal
across weekday dayparts is fairly close, the appeal
across weekend dayparts is wide and with the
exception of Saturday afternoon and night is

much less than the weekday appeal.   Nevertheless,
the appeal of NPR station weekend programming
to radio users by daypart has increased dramati-
cally.   Late Saturday has more than tripled, while
earlier Saturday has more than doubled.   Note
though, that the rate of growth for the most
important Saturday daypart, 10A-3P, is the smallest
growth rate for the day.

While the Monday-Friday 3P-7P programming of
NPR stations continues to show the most appeal
to radio users, Monday-Friday morning program-
ming is catching up, growing at a faster rate than
NPR station use in the 3P-7P daypart.   Use of
NPR stations by radio users during the important
Monday-Friday 10A-3P daypart is falling behind,
however, with an index of change of only 193
since 1977.   The same is true for the Monday-
Friday 7P-Midnight daypart.

Average Time Spent Listening by Persons 12+,
Monday-Sunday 6AM-Midnight, to NPR stations
was 7.8 hours per week for the Spring 1985 survey
period (about on par with the lowest ranked com-
mercial format estimates).   TSL to NPR has not
changed much since 1982, but shows an improve-
ment of 37% since 1977.   Longest average Time
Spent Listening is reported by Men 35-44 (Nine
hours).   Men 18+, on average, listen longer than
Women 18+ to NPR stations, and have since 1979.
Among the demographics that listen to Radio the
most (eg., Men 18-24), listening to NPR stations
is of short duration.   Improvements in Time Spent
Listening over the years are most evident in the
older demographics: Men 45+ and Women 55+.
While all demographics have shown some growth,
these age-groupings are the only ones to exhibit
growth greater than the NPR station 12+ average.

The following table   (Table 4.4) of Average TSL
to Radio and Average TSL to NPR Stations helps
to illustrate that the length of listening, by demo-
graphic, to NPR stations is not necessarily related
to the length of listening to radio.

Table 4.4
Average Time Spent Listening by Demographic
Spring 1985, Monday-Sunday 6A-Midnight
Continental United States

Demographic	Average TSL in Hours to Radio	to NPR	NPR Station TSL as Pct of Radio TSL
Total 12+	23.9	7.8	32.6
Men 18+	24.3	8.1	33.3
Women 18+	24.8	7.7	31.0
Men 18-24	26.4	5.5	20.8
Men 25-34	25.5	8.0	31.4
Men 35-44	23.4	9.0	38.5
Men 45-54	22.4	8.0	35.7
Men 55-64	23.0	8.0	34.8
Women 18-24	25.8	5.3	20.5
Women 25-34	23.8	7.0	20.4
Women 35-44	23.2	8.3	35.8
Women 45-54	25.0	8.1	32.4
Women 55-64	25.7	8.0	31.1

NPR Station TSL as a Percent of Radio TSL is essentially a meaningless statistic unless it can be used to describe relative listening loyalty across demographics (or dayparts). In the table above, the Percents indicate that Men and Women 35-44 are more loyal to NPR stations than any other demographic. The Table also shows that the higher than average TSL reported by Men 25-34 and Women 45-54 and 55-64 may be largely a function of longer length of listening to radio by those demographics rather than a function of the success of NPR station programming to appeal to those demographics.

In Chapter 3, we noted that the Monday-Friday 10A-3P Radio cume listens longer during that daypart than any other Monday-Friday daypart cume. Not only was length of listening longer, but the percent of available time to listen spent listening was highest for the midday period. The following table (Table 4.5) examines: TSL by the NPR Station Cume by daypart, NPR Station TSL expressed as a percent of available time to listen (Daypart Efficiency), and a comparison of that Daypart Efficiency to Radio Daypart Efficiency.

Table 4.5
Average Time Spent Listening by Daypart
Spring 1985, Persons 12+
Continental United States

Daypart	NPR Station Average TSL In Hours	Daypart Efficiency Pct		Efficiency Index
		Radio	NPR	
M-F 6A-10A	3.4	30.5	17.0	56
M-F 10A-3P	4.0	31.6	16.0	51
M-F 3P-7P	3.0	25.5	15.0	59
M-F 7P-Mid	2.8	17.6	11.2	64
Sat 6A-10A	1.4	40.0	35.0	88
Sat 10A-3P	1.9	48.0	38.0	79
Sat 3P-7P	1.5	45.0	37.5	83
Sat 7P-Mid	1.6	38.0	32.0	84
Sun 6A-10A	1.4	40.0	35.0	88
Sun 10A-3P	1.7	44.0	34.0	77
Sun 3P-7P	1.5	45.0	37.5	83
Sun 7P-Mid	1.7	36.0	34.0	94

The NPR station cume for the Monday-Friday
10A-3P daypart exhibits the longest daypart TSL
at 4.0 hours per week.   However, because there
are more available hours to listen during that
daypart, the cume should exhibit a longer TSL
than the 6-10A or 3-7P cume.   To compare TSL
across dayparts of different lengths, we have
computed a "daypart efficiency" percent.   For the
NPR station cume, note that the efficiency percent
for the 10A-3P daypart is less than that for the
6A-10A daypart.

Time spent listening to Radio is different, though,
by daypart as we noted in the previous Chapter.
The last column in the table adjusts the NPR
Daypart Efficiency Percent for differing levels of
TSL to Radio.   It becomes painfully evident that
TSL to NPR stations during the midday daypart is
nowhere near the level it should be given radio
use in that daypart.   Even though the 4.0 hours
time spent listening is the longest of any reported
daypart, it is the poorest performance for any
daypart when length of time available to listen,
and time spent listening to Radio, are taken into
account.

In Conclusion . . .

The performance of commercial stations classified
by format or of NPR stations in total provides a
context for comparing individual station audience
estimates.   For example, a public station that
programs primarily News and Information and
achieves an average TSL of 5.7 hours per week,
can compare that average TSL to the commercial
News/Talk TSL of 8.3 hours per week and see
evidence of a problem in appealing to its audience
for a significant length of time.   That same public
station may compare itself to other public stations
in an attempt to justify performance levels.

Comparing individual station performance to these
national measures does not take into account

several factors, one of which is the lack of homo-
geneity among the stations that are affiliated
with NPR. (The comparison tool is exacerbated
for those non-commercial stations that are not
NPR-affiliated. However, "norms" for non-commer-
cial radio, per se, do not exist; NPR "norms" are
the closest available.) More importantly, though,
these comparative measures do not account for
varying conditions at the local market level: the
demographics of the market; how radio is used in
the market; the strength of the competition in
the market. Conditions like these are those most
likely to affect individual station performance.

Chapter Five

Arbitron's Local Market Report

Although typical radio use across the country is
basically the same, there are variations in use
that are unique to each market. These variations
can be the result of market size or different
population compositions. The listening patterns in
a market that includes a heavy concentration of
senior citizens will not be identical to those of a
market that is mainly populated by 18-34 year
olds, because the lifestyles of the two age-groups
are different. Environmental conditions can also
impact lifestyle and, therefore, radio use. The
Local Market Report supplies the information
required to understand radio use in YOUR market
by YOUR target audience. Not only does it pro-
vide information about typical radio use, it breaks
down radio usage by station, so that any subscrib-
er can have incredible detail describing the com-
petitive market place in which the station exists.

[Note: the layout of the Radio Market Report,
both the Standard and Condensed versions, will
change significantly sometime in 1987. Both
reports will contain estimates for additional demos
and dayparts and an expanded Trends section.
Some of the current report sections will be
dropped. The following describes the Market
Report layouts as of the Fall 1985 survey.]

The Cover

Each non-commercial station that subscribes to an
Arbitron market through the RRC receives a copy
of the Radio Market Report for that market.   The
report is always stickered "For Internal Manage-
ment Use Only".   The limited license fee that non-
commercial subscribers pay for Arbitron data
access does not include the right to cite (ie.,
disclose) any audience estimates contained in the
Market Report for commercial stations to personnel
not affiliated with the station.

The cover may also contain an imprinted label
that highlights any special station activity that
occurred during the survey period, or any changes
to the Market Report.   The label always directs
the user to a report page that contains the details
behind the label.

The Introductory Pages

The opening page of the report is standard boiler-
plate: a very brief methodological description;
and, a warning on the proper citation of the
audience estimates contained in the report.

Page 2A includes the map for the market.   The
counties are shaded and hatched to delineate the
portion of the survey area to which they belong:
Metro, and TSA, and ADI for Top 50 ADI's.   Page
2B lists the counties included in the survey area,
Metro counties first, followed by Non-Metro.   The
Metro and Non-Metro lists are each in alphabetical
order (without regard to state).   For each county,
the Total 12+ Population estimate, as supplied by
Market Statistics, and the usable intab diaries are
shown.   Listed as separate units are the portions
of counties that have been split geographically
(eg., East/West).   If any Metro county has been
defined to contain High Density Black and/or
Hispanic Areas, a "B" or an "H" appears next to
the county name.   A summary of the Total and

appropriate Ethnic Group 12+ Population and Intab for all High Density areas in the Metro appears at the bottom of the page.

The Page 2B display allows report users to quickly note the proportionality of diary return by county. Although sample biases created by a poor distribution are adjusted for in the Sample Balancing System, it is always useful to know how closely the sample matches the population distribution.

Page 3A is another display of population estimates and intab, this time for broad target and discrete sex/age groups, and applicable Ethnic groups, if any, for each reported geography in the market. The contribution percents of the population and intab for each demographic to the Total 12+ population estimate and intab are listed, once again allowing report users the ability to see the variances in the population and sample distributions.

Because Arbitron does not systematically eliminate persons residing in Group Quarters from its Sample Frame, it also does not eliminate them from the population universe. While Group Quarters residents are generally not listed in telephone directories, they may be included in that portion of the sample retrieved via ESF. The estimated percents of Persons 12+ in the Metro residing in Military or College or Other Group Quarters are displayed.

Page 3A also includes diary placement and return information for each of the reported geographies, as well as the Sample Target Goal that has been established for the Metro. The diary placement information, by listed and ESF sample frames, details the number of households originally selected for inclusion in the sample, the estimated number of persons 12+ residing in those households, the number of households contacted by Arbitron, the number of contacted households that agreed to participate, the number of diaries mailed and then the number of diaries that were returned and usable.

On Page 3B is the list of stations that met Mini-
mum Reporting Standards for the market and
survey.   The network affiliation and national rep
are shown for each station, along with power and
frequency, and city/county of license or identifi-
cation. [Those stations with angle brackets around
their city listing have opted to be listed by their
city of identification rather than license.]   Any
station that subscribed to the market report before
its publication is denoted with an "S".

The stations, on this page, and throughout the
report, are listed in alphabetical order (with some
simulcast exceptions) by location.   Stations that
are licensed to the Metro Survey Area, the "home"
stations, are listed first.   In Top 50 ADI markets,
stations that are outside the Metro but licensed
to the ADI survey area, are listed second, below
a dotted line.   Finally, stations that are located
outside of the Metro (and ADI, if applicable)
appear below a dotted line.   If a station that met
Minimum Reporting Standards was deemed to have
engaged in a Special Station Activity called "Sur-
vey Announcements" (ie., a reference to the survey
while the survey is in progress), that station is
listed below all other stations in the market re-
port, following a dotted line that includes a de-
scriptive highlight of the activity.   [This "punish-
ment" is not the most severe one available to
Arbitron.   The ratings company might choose to
delist (ie., not make audience estimates available
in any form) a station, even if it otherwise meets
Minimum Reporting Standards, for participating in
Rating Distortion activity (ie., some perceived
attempt to obtain false listening credit).]

Pages 4A-C are entitled the Metro Market Profile.
Included on the pages are some of the socio-eco-
nomic characteristics of the population residing in
the Metro Survey Area (income, education level,
occupation), the Black and Hispanic population
estimates by sex/age group, even if the market is
not controlled for the Ethnic population, newspaper
and magazine circulation and passenger car regis-
tration estimates.   These estimates provide report

users some insight to the characteristics of the potential metro radio audience: where they work, in which occupation class, how they get there, how much they make, where they spend their income, their education level, and which newspapers and magazines they read. This same information provides potential advertisers (read underwriters) an understanding of the audience they can potentially reach via the radio medium.

Included in the Profile is Donnelly Marketing Information Service's lifestyle profile of the metro area. It is a geodemographic tool that characterizes the population of a zip code by socio-economic indicators. Each zip code is assigned to one lifestyle cluster. The percent of the Metro Population that resides in each cluster is a measure of the education level and affluence of the population, among other things. It can be useful to help refine the size of a station's potential audience on characteristics other than simply sex and age. For example, a station providing programming with an urban appeal, may have a tough time if 60% of the population of the market lives in rural areas. It's only the remaining 40% that are most likely part of the station's potential audience.

Page 5A contains a statement of Arbitron's Special Station Activity policies. The most serious of the special activities is called Rating Distortion[1], when

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[1]The line between a Survey Announcement and Ratings Distortion is often a thin one. Arbitron once delisted a commercial classical station in Portland OR for including a letter from the General Manager in the program guide "exhorting" guide readers, if they were participating in the Arbitron survey, to report the station call letters in their diaries. Because there was no mention of the fact that diarykeepers should only include the station if and when they listen to it, the offending station crossed the line from breaking the "Survey Announcement" guideline to "Rating Distortion", and was delisted.

Arbitron effectively eliminates the ability to tabu-
late audience estimates for the offending station.
Because lack of station adherence to such policies
has the potential to bias the results of a survey,
Arbitron reserves the right to cite and/or flag (as
well as delist) the call letters of any station that
particpates in such activity.   Arbitron is very
serious about protecting the integrity of its survey
process.

The facing page (5B) includes descriptions of
special station activity for the market and survey,
if any, along with a description of changes in
either the report, the market definition, or station
call letter assignment, that may affect a user's
ability to trend the estimates over time.   Any
qualifying station that reported off air or inter-
mittent or reduced power status during the survey
will be noted. [While some stations feel it is
important to inform report users of technical
problems that might have kept their audience
estimates from being at their highest possible
level, other stations do not report their technical
problems because they might detract from a "qual-
ity station" image.   Arbitron does not adjust radio
audience estimates for the time a station was off
the air due to technical difficulty.]

Trends

The Trends section of the market report is the
first place to look to determine the state of the
competitive marketplace.   Audience estimates are
reported for Total Persons 12+, Men 18+, and
Women 18+, and in Standard Market Reports,
Teens for Monday-Sunday 6AM-Midnight and four
Monday-Friday dayparts.

The "Metro Total" estimates at the bottom of the
page are the Metro Total Average Quarter-Hour
Ratings for the current survey and up to four
previous surveys.   You can quickly determine if
reported listening levels are up or down from

previous surveys and if the change is daypart
specific.   Changes in listening levels are changes
in radio usage and can have a corresponding
impact on an individual station's persons estimates,
an impact that may have been beyond the direct
control of the station.

All of the station estimates in the section are
Metro Average Quarter-Hour Shares for the cur-
rent survey and up to four previous surveys.
Review of the trends provides immediate feedback
about the winners and losers in the market: which
stations have the largest share of the pie; which
stations are on the upswing; which stations have
started to slip; which stations evidenced dramatic
changes up or down in relative audience size.

Consider the stations by format: MOR, easy listen-
ing, CHR, AOR, country, AC, news/talk, urban,
hispanic, etc.   Are the share changes a function
of format or the result of changes in listener
loyalty within a given format?   A change in share
for a format (rather than changes among stations
within a format) tells you about a behavioral
change in the radio audience.   The change may be
due to external and non-controllable factors (base-
ball season, big news events, school vacation).
Or, the change may be due only to the changing
needs of the audience, a subtle variable that a
station must adapt to in order to succeed in even
maintaining audience, let alone obtaining audience
growth.

The Trends section is a snapshot of the survey
results. Details on the audience for commercial
stations, plus the radio audience overall, are loca-
ted in the report sections that follow.

Standard Market Report: Target Demographics

Metro and Total Survey Area audience estimates
are provided for certain "target" demographics,
those sex-age groupings that stations are most

likely to be addressing.   The section is divided
into Men, Women, Adults and Teens.   For Men,
Women, and Adults the age-groups reported in-
clude: 18+, 18-34, 18-49, 25-49, 25-54 and 35-64.
AQH Persons, Ratings and Shares and Cume Per-
sons estimates are listed for Total Week plus four
Monday-Friday, four Saturday and four Sunday
dayparts.   Additional broad dayparts are included
for Men and Women 18+.

Examination of this section allows a station to
note its relative strength in its target.   Required,
first, then is knowing which of the sex/age group-
ings most closely identify the station's desired
audience.   Are you programming for 18-34 year-
olds, or 25-49 year-olds or 35-64 year-olds?   Are
you programming for Men, Women or Adults?
Compare your audience estimates, where possible,
to those reported for the commercial stations (and
other non-commercial stations, if you receive that
data) for your target demographic.

Starting with the Mon-Sun 6AM-Midnight daypart,
rank all stations based on their AQH Persons,
fitting your AQH persons in where appropriate.
Stations at the top of the ranking are your MAJOR
competition; your potential audience is most likely
to be listening to them, when not tuned to your
station.   Examine those stations by the individual
dayparts, by once again ranking AQH persons.
Determine in which dayparts your rank rises and
falls and if the stations at the top of the ranks
change based on dayparts.   This gives a measure
of the audience satisfaction with the programming
offered by your station at different times of the
day, as well as their preferred programming during
different dayparts, based on the reported survey
period.   These measurements should be compared
to those compiled from previous survey periods to
note shifts in the audience.

Of importance too, is determining when your
target audience listens to radio by mapping the
listening levels (Metro Total Average Quarter-
Hour Ratings) for that target across all of the

dayparts.

Standard Market Report: Discrete Demographics

That section of the report labeled "Dayparts Avg
and Cume" includes Metro and Total Survey Area
Average Quarter-Hour and Cume Persons estimates
for combinable demographics, and for the Total
12+ demographic. Metro Shares and Cume Ratings
are also reported, but these are not combinable
across demographics. Of primary interest, should
be those discrete demographics that comprise your
target. For example, if your target is Adults 25-
49, concentrate on the 25-34 and 35-44 and 45-54
groupings of Men and Women.

You may determine if the strength of the compe-
tition lies at the high or low end of the target,
or is skewed male or female, if the target is
Adults, or if the station is equally strong in all
components of the target. Does the station
achieve sizable audience outside of its target?
You can examine listening levels by the compo-
nents of the target; they may vary by daypart.

Examination of this section of the Market Report
will become more meaningful as stations, through
the RRC, retrieve their own audience data at the
discrete demographic level. Currently, it is the
place in the report where listening for the broad-
est demographic, Persons 12+, is reported for
standard dayparts.

Standard Market Report: Hour-by-Hour Averages

The market report contains only Monday-Friday
hourly audience estimates for the Metro and Total
Survey Area. Only AQH persons for a mix of
demos and limited shares are reported. Hourly
cumes are not included in the market report; they
are only available via access of Arbitron's on-line

diary database (AID), the present source of data
for non-commercial stations.   This section provides
invaluable detail about the use of radio throughout
the day from 5AM to 1AM, Monday-Friday, by
demographic for your market.   Your station's
hourly average quarter-hour estimates can be
plotted alongside those for the market to deter-
mine if the up and down tune-in patterns are
similar to those for the market.   Where the pat-
terns are different is an indication of station
strength or weakness, relative to radio use.

*Standard Market Report: Away-from-Home
Averages*

The Away-from-Home listening estimates section
is a display of Average Quarter-Hour Persons
estimates, Metro and TSA, reporting listening
while not at-home, and the percent of the AQH
for the daypart that the listening represents.
Only three dayparts are reported: Combined
Drive, Midday and Night.   There is no attempt to
distinguish between radio use in-car or in some
other place, so the national listening data de-
scribed in Chapter 3 must be utilized in order to
estimate listening location in your market.   The
percent away-from-home figures provide a relative
measure of strength of away-from-home or at-
home programming appeal across stations.

Standard Market Report: Cume Combinations

The Cume Combo section provides Metro Cume
Persons estimates for eighteen custom (non-stand-
ard) dayparts or daypart combinations.   Estimates
like these can be used by advertisers buying
combinations of dayparts (eg., a spot rotation of
Mon-Sat 6-10A.)   Astute programmers can also
use the cume combo section to determine audience
flow, or lack of it, from one daypart to another
(eg., the percent of the Mon-Fri 6-10A daypart

cume that also listens Saturday 6-10A). Weekday
listeners that are exclusive to a single daypart
are readily identifiable.

Standard Market Report: Exclusive Cume

This abbreviated section lists the estimated Metro
Cume persons that report listening to only one
station during a daypart, for limited demographics.
The exclusive cume measure can be used as a
guideline when examining changes in a station's
average quarter-hour audience over time. These
listeners have reported some quarter-hours of
listening to a station and not to any other; they
have not been lost to the competition. When a
station's share and exclusive cume both drop,
while Cume Persons remains constant, the share
drop can be totally explained by the loss of quar-
ter-hours of listening by the existing Cume to the
competition.

The Exclusive Cume estimates are also a sales
tool; some number of listeners have not been
reached by an advertisement on any other station.

Standard Market Report, Top 50 ADI's Only: ADI Section

Except for the opening Total Week display, the
section is very similar to the Target Audience
section of the Market Report. The differences
are in the geography for which the audience
estimates are reported (ADI instead of Metro and
TSA), and the stations, since Minimum Reporting
Standards for this section of the report are based
on ADI estimates rather than the Metro estimates
base used for the Metro/TSA section of the report,
to the extent that the ADI is different from the
Metro.

Condensed Market Report: Target Audience

The only audience estimates section of the CRMR,
besides Trends, is a display of Average Quarter-
Hour and Cume Persons for the Metro and Total
Survey Area plus Metro AQH Shares and Ratings.
Outside of Persons 12+, Men 18+ and Women 18+,
the demographic display is limited to Adult target
demos, including 18-34, 18-49, 25-54 and 35+.
Monday-Friday and Saturday dayparts, plus Sunday
10A-3P and 3P-7P are included. Utilization of
the report is identical to utilization of the Target
Audience section of the Standard Market Report,
except that the target audience description cannot
be refined and examined by sex.

The Back Pages

Included at the end of each market report are a
Glossary of Terms and a brief Description of
Arbitron's Methodology, including a list of the
limitations inherent in the methodology and proc-
essing techniques.

Following the methodological description and
limitations are two pages devoted to providing
users with the ability to estimate the reliability
of Arbitron's sample and the standard error asso-
ciated with any reported audience estimate. Uti-
lization of the Reliability Tables are described in
the Appendix on Sample Error in this book.

*Comparing Radio Use in Market to National Radio
Use*

Tables describing use of radio in your market,
similar to those appearing in Chapter 3 that de-
scribe radio use nationally, can be constructed
with the information available from the local
market report. "Market Listening Totals" are only
reported for the Metro Survey Area. Therefore,

computation of radio use in your market, actually
means computation of radio use in the Metro.[2]
The Tables can be prepared using estimates for
Metro Persons 12+, or more refined Metro Target
demographics.   Knowledge of two basic calculations
is required: computation of a rating and compu-
tation of Time Spent Listening.

Recall that a Rating is a Persons estimate ex-
pressed as a percent of the population estimate.
To compute a Cume Rating, we divide the Cume
Persons estimate by the population.   To compute
an AQH Rating, we divide the AQH Persons esti-
mate by the population.   Many, but not all, ratings
are already computed for you in the market report.

To determine what percent of the metro population
listens to radio sometime during an average week,
6AM-Midnight, requires the division of the Metro
Cume Persons Estimate for Monday-Sunday 6A-
Midnight by the Metro population estimate.   As-
suming a Metro Total Cume Persons Estimate,
Total Week, of 506,100 and a Metro population of
531,500:

Cume Rating = Cume Persons ÷ Population * 100
     95.2%   =   506,100   ÷   531,500 * 100

Determination of the listening curve for your
market's radio users can only be performed from
estimates in Standard Market Reports for Monday-
Friday hours between 5AM and 1AM.   From the
hour-by-hour section of the market report, plot
the Metro Total Average Quarter-Hour Persons
estimate for each hour (or convert the persons
estimates to ratings and plot hour-by-hour AQH

---

[2]In Top 50 ADI markets, ADI Market Totals
are reported allowing computation of radio use in
the ADI.   In our discussion, we will assume inter-
est in the Metro Totals.   For stations wishing to
use the ADI as a base for computation, replace the
word Metro with ADI whenever appropriate.

ratings) in the day.   The shape of the day will
help refine the Monday-Friday Prime Time listening
hours for your metro.

Computing Radio use by daypart requires deter-
mination of the Metro Total Cume for each Day-
part.   The cume for each daypart can then be
expressed as a percent of the Total Week cume.
The following table portrays Metro Total Cume
Persons 12+ estimate for Monday-Friday dayparts,
plus Weekend 6AM-Midnight.   The last column in
the table is the percent that each daypart contri-
buted to the Total Week 12+ Cume of 506,100.

Daypart	Cume Persons	Contribution Pct to Total Week
M-S 6A-Midnight	506,100	
M-F 6A-Midnight	498,000	98.4
Weekend 6A-Mid	436,900	86.3
M-F 6A-10A	455,400	90.0
M-F 10A-3P	360,000	71.1
M-F 3P-7P	412,800	81.6
M-F 7P-Mid	312,400	61.7

These daypart listening estimates can be tracked
year-to-year (and across seasons, if your market
is measured multiple times in a year) to determine
changes in daypart utilization by radio listeners
over time.

Computing Average Time Spent Listening to Radio
in a week requires knowing both the Metro Total
Average Quarter-Hour and Cume Persons estimate
for Monday-Sunday 6A-Midnight.   The multiplica-
tion of the AQH estimate by the number of quar-
ter-hours in the daypart (Total Week quarter-hour
count is 504) yields the Total Quarter-Hours of
Listening in the Metro.   Dividing that by the
Cume results in Average Time Spent Listening by
the Cume.

Given a Total Week Metro AQH of 88,200, and the
Cume estimate of 506,100, average TSL can be
computed:

```
Total QH's Of Listening = AQH Persons * QH's in Daypart
     44,452,800          =   88,200      *       504
```

```
  Average TSL in QH's    = Total QH's  ÷ Cume Persons
        87.8             = 44,452,800  ÷   506,100
```

Dividing Average TSL in QH's by four results in
an expression of TSL in hours. Average TSL for
the above Metro is just short of 22 hours per
week.

Average TSL for each daypart can also be com-
puted by pulling the Metro Total AQH and Cume
Persons estimates for the appropriate daypart in
the local market report. The number of quarter-
hours in daypart must be derived by multiplying
number of hours in daypart per day times number
of days times four. For example the number of
quarter-hours in the M-F 6A-10A daypart is 80
(four hours times 5 days times four). Once Aver-
age TSL for the daypart has been computed, a
"daypart efficiency" can be derived by dividing
the average TSL in quarter-hours by the number
of quarter-hours in the daypart. Calculations for
our sample market show the following results, for
some Monday-Friday dayparts:

Daypart	AQH Persons	Cume Persons	QH's Available	Avg TSL in QH's	Daypart Efficiency
M-F 6A-10A	128,100	455,400	80	22.5	28.1%
M-F 10A-3P	97,900	360,000	100	27.2	27.2%
M-F 3P-7P	95,600	412,800	80	18.5	23.2%
M-F 7P-Mid	51,800	312,400	100	16.6	16.6%

Tracking Average TSL by Daypart year-by-year
(or by season) for the Metro listeners allows you
to get a feel for changes in importance to the
radio listener of different dayparts.

Knowing Average TSL, Total Week, allows you to
estimate the average time spent listening to radio
by different listening segments, from those that
are the heaviest users to the lightest. Given the
Quarter-Hour Contribution Percents to Total Lis-
tening that apply to each quintile, listed in Chap-
ter 3, and the Total Quarter-Hours of listening
arrived at in the Average TSL· calculation, you
can compute TSL by quintile. Remember that
each quintile contains exactly 20% of the cume.

For our Total Week Cume estimate of 506,100
persons, TSL can be computed for quintile seg-
ments that each contain 20% of the total, or,
101,220 listeners. Total Quarter-Hours of Listening
to be divided among those quintiles is 44,452,800.
Applying the appropriate quintile quarter-hour
contribution percent to the Total Quarter-Hours
of Listening results in quarter-hours of listening
by quintile. Dividing that by the cume for the
quintile results in Average TSL by quintile.

	Expected QH Contribution Percent	QH's of Listening to Radio	Avg TSL to Radio in QH's	to Radio in Hours
1st Quintile	43	19,114,704	188.8	47.2
2nd Quintile	27	12,002,256	118.6	29.6
3rd Quintile	16	7,112,448	70.3	17.6
4th Quintile	10	4,445,280	43.9	11.0
5th Quintile	4	1,778,112	17.6	4.4
Average	20	8,890,560	87.8	22.0
Typical	16	7,112,448	70.3	17.6

Performing some of these basic illustrations of
radio use in your market, will provide a context
in which you can measure your own station's
performance.

Section Two

Public Radio Station Audience Data

Section Two

Introduction

Public radio stations that subscribe to the Arbitron service through the auspices of the RRC receive different types of data packages depending upon RRC membership classification (Full or Associate or Non-Member). Stations located in or near an Arbitron-measured market receive a different data package than those which are located in largely "unmeasured" areas. The level of detail provided for each station is also dependent upon the number of diaries in which the station has been recorded by Arbitron diarykeepers.

The RRC processes data for stations that subscribe to Arbitron's local market report service by access of Arbitron's on-line diary database. The computer access system is known as Arbitron Information on Demand, abbreviated as AID. To each sub-scribing station, the RRC may provide:

RRC Analysis of Diary Mentions
AID Market Summary Report
Individual Station Audience Estimates
Programmer's Package and RRC Graphs
Mechanical Diary
Customized Audience Estimates

Stations located outside of regularly surveyed markets can receive Arbitron audience estimates in the form of a Primary Signal Area (PSA) Re-

port, and in addition, may purchase a Mechanical
Diary.

Note that the source of the audience data is
Arbitron, even when it is provided through the
RRC.   When citing the audience estimates, it is
always Arbitron (not the RRC) that must be cited
as the source.

Section Two describes each of the products of
Arbitron subscription.   We recommend that you
review this section with your own data in hand so
that you can follow through the presentations of
the samples with your own audience estimates.
For those stations that do not receive or purchase
certain types of data, we have provided data
samples throughout the Section to illustrate what
can be learned about audience behavior.

Chapter Six

RRC Analysis of Diary Mentions

The Analysis of Diary Mentions, Complete Station Listing, provides a listing of all stations that have been recorded in at least one diary in the reported Market and Survey Area (described at the top of the page) and that have qualified for inclusion in the AID database for the Arbitron market. The qualification standards for AID are not as rigorous as those for the local market report.

To start, non-commercial stations are not automatically excluded, as is true with the local market report. And, any client can request (or Arbitron itself may specify) that specific stations be included, without regard to the normal qualification criteria. The criteria: the station must have received five or more minutes of listening in a quarter-hour in at least ten Metro or ADI (if applicable) intab diaries, or in at least one percent of the Metro or ADI intab sample goal, whichever is greater. The audience size criteria, used for qualification in the local market report, is currently not used for AID qualification.

For each station, listed in alphabetical order, diary mentions are displayed for Total 12+ and by demographic. The "Market" display that appears at the end of the listing is an array of the intab diary counts by demographic.

From the demographic diary counts, the RRC computes for each public radio station a Demo-

graphic Composition Percent for Teens, Adults 18-24, 25-34, 35-49 and 50+.   This Composition is derived by dividing the station's diary count within a demo by that station's 12+ diary count.   That same Composition Percent computation is also performed for the Market.

Given the Composition of diaries for the Market, and an individual station's diary composition, indices of demographic appeal can be computed for each station.   The station Composition Percent for a demo divided by the Market Composition Percent for the same demo, expressed as a percent, equals the Composition Index.   An index of 100 means that the station's composition is identical to that for the market.   An index greater than 100 indicates that the station achieved diary mentions greater than expected, given the market's diary composition.   An index less than 100 shows that the station achieved fewer diary mentions than expected given the diary composition for the market.

These indices are a quick measure of demographic appeal.   If your station is programmed to appeal to Adults 25-49, then the indices from the 25-34 and 35-49 demos should exceed 100.   If they don't, then the station has not succeeded in offering programming that is appealing to the intended audience.   To the extent that indices approach or exceed 100 outside of the station's target age groups, the station may be offering programming throughout the broadcast week that is too broad in appeal.

Every station will have at least one demographic composition index that exceeds 100 (unless the index for every demo is 100).   These indices say nothing, however, about audience size across stations.   Note that Station WBBB-FM, in Figure 6.1, shows its highest index for Adults 50+, a higher index even than Station WAAA-FM.   Note, though, that WAAA's diary count, and therefore Reach Percent, among Adults 50+ exceeds that for WBBB.   Instead of audience size, the indices indi-

cate the relative demographic appeal of the sta-
tion. A station, like WAAA, may have less appeal
to Adults 50+ than another but reach more of
that demo.

Figure 6.1
Sample RRC Analysis of Diary Mentions

		P12+	Teens	A18-24	A25-34	A35-49	A50+
** WAAA-FM							
Diary Mentions		110	5	11	23	38	33
Composition (%)		100	5	10	21	35	30
	Index	100	56	77	84	146	103
Reach	(%)	16	8	12	13	23	16
** WBBB-FM							
Diary Mentions		48	1	0	8	16	23
Composition (%)		100	2	0	17	33	48
	Index	100	22	0	68	138	166
Reach	(%)	7	2	0	5	10	11
MARKET Intab		691	59	89	176	164	203
Composition (%)		100	9	13	25	24	29

Audience size is only measured in the "Reach"
computation. For each station, the percent of
Market intab that included listening to the station
is displayed.

The Reach Percent is roughly analogous to the
station's Cume Rating, but, only roughly, because
this reach is based on unweighted diaries. To the
extent that the diary distribution is not reflective
of the population distribution (by race, age-sex,
and/or geography) of the market survey area, the
reach percent shown on the Analysis of Diary
Mentions will differ from the station's Cume
Rating.

RRC Analysis of Metro Diary Mentions

The RRC Analysis of Metro Diary Mentions pro-
vides an overview of Reach Percents and Demo-
graphic Appeal Indices for the most important
stations serving the Metro Survey Area.   The RRC
has defined "most important" as those stations
that are recorded in at least 3% of the Metro
intab diaries.[1]   As you use this analysis, note
where your station stands in the listings, and
which formats and stations are dominant in your
market among the different age-groups, particularly
those age-groups that are encompassed by your
target.   This will assist in identification of the
competition.

The opening page of the RRC Analysis of Metro
Diary Mentions specifies the number of stations
that meet the RRC's minimum diary mention cri-
teria, and then lists those stations, ranked accord-
ing to the Metro 12+ (unweighted) Reach Percent
for each station.

The first section of the Analysis concentrates on
diary reach by demo.   The reported diary reach
includes the count of the number of Metro diaries
in which the station was recorded and that count
expressed as a percent of the Metro intab for the
demographic.   For each demographic, only the top
half of the stations that met the 3% of 12+ diaries
criteria are shown.   It is not uncommon for a
station to reach over 50% of the diaries returned
by the younger demographics (Teens and 18-24).
The reach percents tend to be more dispersed
among the middle demographics (25-34 and 35-49).
Rarely will a single station, or even two, dominate

---

[1]In those markets where Metro intab is less
than 317 diaries, Arbitron may not have included
all stations that could meet the 3% RRC criteria
on the AID database, due to its 10 diary mention
qualification criteria.   Because these stations are
not included on the AID database, they cannot be
included in the RRC tabulation.

those listings since competition for listening by those demographics is made more difficult by the variety of tastes evidenced by those age-groups. At the older end of the scale, among Persons 50+, high penetration by only a couple of stations will probably be evident, and the stations will likely be AM stations.

The second section of the Analysis examines those stations that meet the RRC reporting criteria by their demographic appeal. Demographic appeal is not measured here by audience size. Rather, it is reflected in the Demographic Composition Index, the percent of a station's 12+ diary count returned by a demo indexed to the percent of the Metro's 12+ intab for a demo. This is a measure of relative strength in a demo, rather than absolute audience size. All stations who exceed average appeal (ie., an index of 100) in a demographic are listed. Invariably the listings for the 12-17, 18-24 and 50+ demos will be shorter than the listings for 25-34 and 35-49. This is, once again, because the middle demographics show a wider variety of listening tastes than the demographics at either end of the scale. Also included in this second section is a page detailing gender appeal. The computation is based on the station's Adults 18+ diary count, divided Male/Female, relative to the Market's Adults 18+ intab, divided Male/Female.

The final section of the Analysis is a station-by-station listing of those who met the RRC reporting criteria, including for six demographics, the station's rank in the market based on diary count, reach percent, composition percent and demographic index of appeal.

While the Analysis of Metro Diary Mentions is in no way intended to replace your review of the local market report, it does provide a quick recap of the principal players in your market, allows you to identify those that are successfully appealing to and reaching your target demographics, and provides a measure for how your station stands among them.

Chapter Seven

AID Market Summary Report

Originally developed to provide CPB with public radio penetration by market, when more than one public radio station served the market, the Market Summary includes top-line (Monday-Sunday 6AM-Midnight) audience estimates for non-commercial stations in the market. The report may also provide audience estimates among the Black and/or Hispanic population (if available) and for customized geographies.

Stations that are included in the Market Summary are those CPB-Qualified stations that serve the Metro or whose audience area is encompassed by the Total Survey Area. Non-CPB-Qualified stations who regularly purchase audience data are also included, as are other non-subscribing non-commercial stations in whom at least one subscribing station has expressed an interest.

In metros that include significant Black and/or Hispanic population (and the ethnic group population and intab are therefore controlled for by Arbitron), breakouts of the non-commercial station audience by ethnic group is displayed. (In the Spring survey period, this report on public radio ethnic group penetration is required for CPB support of the data purchase for CPB-Qualified stations).

Customized Geographies are included in many Market Summaries. These special geographies may

be provided to detail a station's "home county"
audience, for a station located on the fringe or
outside of the metro. Or, in large markets, they
can provide a breakdown of audience by geographic
component, particularly useful when listening
behavior or public radio penetration varies by
those different components from the market as a
whole.

The Market Summary is divided into sections.
The universe for each section is defined by a
demographic (sex, age, and ethnic group) and a
geography, listed at the top of the page.   When
an ethnic group title is not explicitly displayed in
the demographic heading, then the implied ethnic
group is Total or all.   The sample size and the
population estimate[1] for the universe are also
displayed.

Audience estimates (AQH Persons and Rating and
Cume Persons and Rating[2]) are listed for each
station included in the Report.   The individual
station estimates may appear multiple times in
different analyses.   The audience estimates dis-
played for each analysis (ie., station grouping) are
the total AQH and the Cume for the stations.   In
other words, in the Market Summary, the Analysis
estimates are audience estimates for a combination
of stations, displayed as if that combination were
a single station.

---

[1]The population estimates listed on the Mar-
ket Summary and on any report generated via AID
may differ slightly from the population estimates
listed in the local market report.   AID's population
estimates are derived by summing the weights
(ppdvs) for each of the diaries included in the
universe, and then rounding that sum to the near-
est one hundred persons.

[2]The rating percents displayed on the AID
printout are based on the computed persons esti-
mate (before rounding) divided by the sum of the
weights for the universe (before rounding).

The AQH for the Analysis is basically a sum of the average quarter-hour audiences for the stations included in the Analysis. Assuming that all the stations included in the Analysis are different, which is almost always true in the Market Summary Report, each station included in the Analysis can compute its AQH share of the total.

The Cume estimate for the Analysis is NOT the simple sum of the individual station cume estimates. Instead, it is an estimate of the number of listeners that listen to at least one of the listed stations for at least one five minute period in a quarter-hour. The estimate is the Net Reach of the all of the stations. This Net Reach estimate and the station cume estimates allow users to determine the number of listeners that the stations included in the Analysis share.

Figure 7.1 illustrates the audience estimates portion of a Market Summary Report page. Our example is for the Metro geography of a market that includes three non-commercial radio stations of varying audience sizes. The Analysis 1 line displays the audience estimates for the combination of the three stations. In total, the stations achieve an AQH of 6100 persons and a Cume of 71,300 and therefore reach 25.0% of the demographic.

If we sum the cume estimates for each of the stations, we arrive at a number far larger than 71,300. Indeed, the sum of the cumes is 96,100. Subtracting the Net Reach from the sum of the cumes allows us to determine the maximum number of persons estimated to use more than one of the listed stations.

A walk-through of the computations appears following Figure 7.1, using data from that Figure.

Figure 7.1
Sample AID Market Summary Report Page

PERSONS 12+ IN METRO
SAMPLE SIZE = 691   POPULATION = 2852

STATION/DAYPART	AVERAGE QUARTER-HOUR AUDIENCE		CUME AUDIENCE	
	(00)	RTG	(00)	RTG
WAAA-AM * M-SU 6AM-MID	11	0.4	170	5.9
WBBB-FM M-SU 6AM-MID	32	1.1	434	15.2
WCCC-FM * M-SU 6AM-MID	18	0.6	357	12.5
	----	----	----	----
ANALYSIS 1	61	2.1	713	25.0
WAAA-AM * M-SU 6AM-MID	11	0.4	170	5.9
WBBB-FM M-SU 6AM-MID	32	1.1	434	15.2
	----	----	----	----
ANALYSIS 2	43	1.5	540	18.9
WBBB-FM M-SU 6AM-MID	32	1.1	434	15.2
WCCC-FM * M-SU 6AM-MID	18	0.6	357	12.5
	----	----	----	----
ANALYSIS 3	50	1.8	616	21.6
WAAA-AM * M-SU 6AM-MID	11	0.4	170	5.9
WCCC-FM * M-SU 6AM-MID	18	0.6	357	12.5
	----	----	----	----
ANALYSIS 4	29	1.0	497	17.4

The computation of maximum Shared Cume:

	Cume Persons
WAAA-AM	17,000
WBBB-FM	43,400
WCCC-FM	35,700
Sum of Cumes	96,100
Less Net Reach	- 71,300
Maximum Shared Cume	24,800

When more than two stations are included in an Analysis, we can only compute the maximum amount of sharing among the stations. That audience that listens to more than two of the stations included in the Analysis cannot be deter-mined; the maximum shared cume assumes there were no listeners who listened to more than two stations. And, we have no way to track the sharing back to the individual stations. How much of a particular station's cume is shared with another (and how much is exclusive) can only be determined from computations on an Analysis that includes just two stations.

Analyses 2 through 4 in Figure 7.1 contain all of the possible two-station combinations of the three stations included in Analysis 1. From each of these Analyses, we can compute the number of listeners shared by the two stations. Using Anal-ysis 2 from our example:

	Cume Persons
WAAA-AM	17,000
WBBB-FM	43,400
Sum of Cumes	60,400
Less Net Reach of Two Stations	- 54,000
Shared Cume	6,400

WAAA and WBBB share 6,400 listeners. Of WAAA's weekly cume, 6,400 (37.6%) also listen to WBBB

while 10,600 do not.

Analysis 2 gives us information about WCCC's
audience too.   The Net Reach for the WAAA/WBBB
combination is 54,000 persons.   Since the Net
Reach for all three stations is 71,300 persons, we
can determine that the WCCC cume includes 17,300
persons who do not listen to either WAAA or
WBBB.

                                    Cume Persons

Three Station Net Reach		71,300
Less WAAA/WBBB Net Reach	-	54,000
WCCC Cume Exclusive of WAAA/WBBB		17,300

Working through Analysis 3 will supply the shared
cume for WBBB and WCCC as well as the WAAA
cume that is exclusive of WBBB and WCCC.   The
fourth Analysis provides the shared cume for
WAAA and WCCC plus the WBBB cume that is
exclusive of those two stations.

WAAA cume that is exclusive of WBBB and WCCC,
determined from Analysis 3, is 9,700 persons;
therefore, the cume shared with WBBB and/or
WCCC is 7,300 persons (WAAA's cume of 17,000
persons less 9,700 exclusive persons yields 7,300
shared persons).   Analysis 2 showed us that the
cume shared with WBBB is 6,400 persons, while
from Analysis 4 we learned that the cume shared
with WCCC is 3,000 persons.   The sum of the
cumes shared with WBBB and WCCC is 9,400,
greater than the WAAA net cume shared by 2,100
persons.   Those 2,100 persons must listen to WAAA
and WBBB and WCCC.   Of the 3,000 listeners that
tune in both WAAA and WCCC, 2,100 also listen
to WBBB; 900 do not.

The end result of the examination of all the
Analyses, for those that are interested, can be a
table of how the public radio cume, in total, and
for each station, for the demographic was
achieved.   A sample constructed from the data

contained in Figure 7.1 is shown in Table 7.1.

Table 7.1
Public Radio Cume Distribution for a Sample Market
Metro Persons 12+

	WAAA	WBBB	WCCC
Persons Using Only One Station	9,700	21,600	17,300
Persons Using Only Two Stations			
WAAA and WBBB	4,300	4,300	--
WAAA and WCCC	900	--	900
WBBB and WCCC	--	15,400	15,400
Persons Using All Three Stations	2,100	2,100	2,100
Station Cume	17,000	43,400	35,700

Persons Using Only WAAA	9,700
Persons Using Only WBBB	21,600
Persons Using Only WCCC	17,300
Persons Using Only WAAA and WBBB	4,300
Persons Using Only WAAA and WCCC	900
Persons Using Only WBBB and WCCC	15,400
Persons Using WAAA and WBBB and WCCC	2,100
Public Radio Cume	71,300

In Market Summary Reports that include more than two or three stations, the number of analyses required to compute public radio audience sharing in detail can get quite large, and are not always generated. Nevertheless, a sense of the sharing among the reported stations is always available.

Inclusion of Demographics defined by Ethnic Group or Customized Geography allows computation of

audience composition on characteristics other than
sex/age. The percent of a station's audience that
is attributable (and not attributable) to an ethnic
group or geographic component is readily available.

Figure 7.2
Sample AID Market Summary Report Page for an Ethnic Group

BLACK PERSONS 12+ IN METRO
SAMPLE SIZE = 134   POPULATION = 570

STATION/DAYPART	AVERAGE QUARTER-HOUR AUDIENCE		CUME AUDIENCE	
	(00)	RTG	(00)	RTG
WAAA-AM # M-SU 6AM-MID	0	0.0	0	0.0
WBBB-FM M-SU 6AM-MID	1	0.2	17	3.0
WCCC-FM # M-SU 6AM-MID	12	2.1	186	32.6
ANALYSIS 1	13	2.3	186	32.6

Of our three sample stations included in Figure
7.2, only WCCC shows significant ethnic group
penetration. Nearly 67% (1200 AQH persons divi-
ded by the 1800 reported for Metro Total 12+ in
Figure 7.1) of the station's AQH is attributable to
Black listeners. Slightly more than 52% of the
WCCC metro cume is contributed by Black listen-
ers.

Because the Black AQH contribution percent ex-
ceeds the Black Cume contribution percent, the
average Time Spent Listening to WCCC by the
Black cume is greater than the average Time
Spent Listening to the station by the non-Black
cume. If the AQH and Cume contribution percents

had been equal, then Black and non-Black Time
Spent Listening would be equal.[3]

While WAAA achieves no measurable Black audi-
ence, the station can still use the information
contained on this Market Summary report page.
Since the station's Metro Cume is 17,000 persons,
and none of that cume was attributable to Black
persons, WAAA's non-Black cume is also 17,000
persons.   Given a Metro Population of 285,200 and
a Black Metro population of 57,000, we can extra-
polate a Non-Black population of 228,200 and
recompute the Cume Rating for WAAA using this
new population base.   WAAA's penetration of the
non-Black population is 7.4%, computed by dividing
the non-Black cume by the non-Black population,
and expressing the result as a percent.   If it
chose, WAAA could use this new Cume Rating of
7.4% (since it's considerably higher than the orig-
inally reported Cume Rating of 5.9%), BUT the
station must be careful to cite the population
base upon which the rating is based -- in this
case, the non-Black population in the Metro.

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[3]This, of course, can be tested by actually
computing Time Spent Listening.   But, note that
WCCC, as well as WAAA, has a pound sign next
to the daypart.   The AID footnote for the flag
states "Audience Estimates Adjusted for Actual
Broadcast Schedule".   The footnote means that
WAAA and WCCC were not on the air during the
entire reported daypart.   Only the quarter-hours
that a station is on the air are used in the deri-
vation of the AQH persons estimate.   To convert
the station AQH and Cume back to average TSL
by the Cume, we must also use only the number
of quarter-hours the station was broadcasting
during the time period.   In lieu of performing the
analysis required to determine number of broadcast
quarter-hours and then TSL, it is often easier to
compare AQH and Cume contribution percents for
a given demographic to the total.   This allows
comparison of average TSL's without actually
having computed average TSL.

The principles of the contribution and extrapola-
tion calculations shown above are not limited to
examination of ethnic group audience but can be
used for different geographies and demographic
groups, as long as those geographies or demos are
a discrete subset of the larger base.   For example,
because Persons 12+ in Metro is a subset of Per-
sons 12+ in TSA, you can extrapolate Persons 12+
in Non-Metro and determine the contribution of
each geographic segment to the total.   Likewise,
Persons 12+ in TSA less the sum of Men 18+ and
Women 18+ in TSA yields Teens in the TSA, so
that audience estimates for a demographic that
has not explicitly been reported can be derived.*

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*Because AID rounds all persons estimates to
the nearest hundred for the reported demographic,
it is possible to end up with a negative result (or
an AQH of 100 with a Cume of 0) when performing
extrapolations.   What appears to be an error is
simply a function of rounding the estimates for
the reported demographic rather than for each of
the discrete demographics that comprise the re-
ported demo.

Chapter Eight

Individual Station Audience Estimates

Audience estimates for public radio stations located in Arbitron-measured markets are currently processed by the RRC by access of Arbitron's on-line database system, AID. Although the dayparts and demographics processed for each station may differ, the output of the AID system provides stations with identical types of data.

Estimates for Station/Daypart combinations are displayed for each selected demographic, defined by a Sex/Age Group in a Geography, and possibly further refined by an Ethnic Group in Metro Areas. For each station/daypart combination, the audience estimates reported are Average Quarter-Hour Persons and Ratings, and Cume Persons and Ratings. Since the reports are station-specific, an Analysis is comprised of different dayparts for the subscribing station. The broad dayparts included in the AID Report are dayparts that match, with some exceptions', dayparts included in the local market report, so that stations have a basis for comparison when measuring audience perform-

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'The following dayparts, processed for many public radio stations, are not included in any Arbitron local market report: Saturday 6AM-Midnight, Sunday 6AM-Midnight, and Monday-Sunday 24 Hours. Monday-Friday 6AM-Midnight, Sunday 6A-10A, and Sunday 7P-Midnight are also not included in Condensed Market Reports.

ance in their market.   These broad daypart analy-
ses are generated for up to ten universes (eg.,
Metro Persons 12+, TSA Men 18+, TSA Women 25-
49).

A separate report for one demographic, generally
Persons 12+ in TSA, is produced, detailing the
Station's Hourly daypart audience estimates, if the
public station has a large enough diary count to
warrant it.   The general requirement for Monday-
Friday hourly detail is more than twenty diaries.

Stations that are full members of the RRC do not
receive their individual audience estimates in the
format output by AID, as associate members and
non-members do.   The audience data for full
members are enhanced by additional processing on
the RRC computers, and output in the form of
RRC Data Tables.   The original data as generated
by AID, with the deletion of AQH ratings, are
included on Table 1 (Standard Dayparts) and Table
2 (Hourly Dayparts) of the RRC Data Tables.

Those stations that do not have a measurable
audience within an Arbitron-surveyed market may
receive a "Primary Signal Area" report.   Arbitron
tabulates the PSA reports using its own in-house
report generating systems.   The number of demo-
graphics and dayparts included in a Primary Signal
Area Report are dependent upon the subscribing
station's diary count.   The dayparts, though, are
always the "standard" ones, ie., those that are
normally used in tabulating radio estimates.   PSA
report recipients have the luxury of having share
estimates already computed for the reported demos
and dayparts, and of not having to research a
separate report (the local market report) to define
and measure the extent of the competition.

No matter what the format of the audience esti-
mates are, the tools available for analysis of the
estimates are the same.   RRC Full Members already
have the results of many of these computational
analyses displayed for them in the RRC Data
Tables.   A reference to a Table number in the

following descriptions will refer Full Members to
the current RRC Data Table that includes the
particular analysis.[2]

The most basic of the audience measures is the
Cume Persons estimate. The Cume estimate for
the broadest demographic and geography (Persons
12+ in TSA), for the broadest standard daypart
(Monday-Sunday 6AM-Midnight) tells you how
many different people tuned in your station during
an average week in the survey period. The Aver-
age Quarter-Hour estimates as well as the Cume
estimates for smaller demographics, geographies,
and dayparts are simply expressions of who com-
prises the cume, when the cume listens, and for
how long.

Size of the Cume

The Cume Persons estimate for Persons 12+ in
TSA (or ADI or PSA) for Monday-Sunday 6AM-
Midnight tells you how many (estimated) listeners
your station reached during an average week of
the survey period[3]. The persons estimate may
also be converted to a Cume Rating to provide an
estimate of the percent of the population your
station reached during an average week. Although
cume ratings can be computed given cume and
population estimates for any geography, they are
generally only publicly cited for the Metro geo-
graphy.

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[2]RRC Data Tables are subject to change
throughout 1986 and 1987. Table References will
be to the RRC Data Table format in existence as
of the Fall 1985 survey period.

[3]According to Arbitron methodology, to be
counted in the cume, the listener must have tuned
in at least once during the survey week for five
minutes within any quarter-hour of the daypart.

Based on our tabulation of Spring 1985 RRC full-member audience data*, the average FM public radio station achieves a Metro Cume Rating of 5.4%, as illustrated in Table 8.1. The Metro Cume Rating for the average AM station among full members is 4.2%.

Table 8.1
RRC Norms: Average Weekly Cume Estimates

Monday-Sunday 6AM-Midnight, Total 12+

	AM Stations Mean	Median	FM Stations Mean	Median
Metro Cume Rating (%)	4.2	4.0	5.4	4.6
TSA Cume Persons (00)	537	216	580	383

Based on Spring 1985 RRC Full Member 112 station sample

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*The tabulation was based on Spring 1985 audience estimates for RRC-Full Members: 103 FM stations, and 9 AM stations. For each break-down, we tabulated the "average station" results and the "typical station" results. Average station results (like average listening results) can be influenced by unusually large or small numbers for just a few stations, and are identified by the "Mean" display. Typical station results represent the mid-point of the result distribution, and are identified by the "Median" display. This mid-point means that 50% of the stations show an estimate greater than the result, while 50% of the stations show an estimate less than the result.

Who Comprises the Cume -- Geographic Distribution
(Bottom Portion of RRC Data Table 4)

Most stations receive their Persons 12+ audience
estimates for two geographies. Whenever one of
the geographies is totally enclosed within the
second geography, additional information about
the cume can be extrapolated. By computing the
difference between TSA and Metro cumes, we can
determine how much of the cume is attributable
to listeners outside of the Metro.

Assume a station with a TSA Cume Persons esti-
mate of 185,800 and a Metro Cume of 152,500.
By subtracting the Metro from the TSA cume, we
know that the TSA cume includes 33,300 Non-
Metro listeners. We can then compute the Geo-
graphic Composition of the Cume on a percentage
basis. Eighty-two percent of the TSA cume is
composed of Metro listeners, while the remaining
eighteen percent is made up of Non-Metro listen-
ers.[5]

The geographic cume composition percents for
Monday-Sunday 6AM-Midnight are meaningless in
and of themselves. The ability of a station to
garner a significant Non-Metro or Metro Total
Week audience composition may be related to the
station's location, the quality of its signal and/or
the station's signal pattern. It may also be re-
lated to the different radio listening behaviors of
the Metro and Non-Metro population.

These geographic composition percents become
more meaningful when examined by daypart.
Looking again at our sample station with a Total
Week TSA cume of 185,800, if the programming

---

[5]For Monday-Sunday 6AM-Midnight, this
composition calculation is available in the AID
Market Summary run. That report may also pro-
vide data allowing composition computations for
more refined geographic areas. See Chapter 7.

for all dayparts was equally appealing to both
geographic segments of the station's cume, then
the composition percents for each daypart would
match those computed for Total Week. The actual
composition percents are displayed in Table 8.2:

Table 8.2
Geographic Cume Composition for a Sample Station
Total 12+

| | Persons (in Hundreds) | | | Percent Composition | |
	TSA	Metro	Non-Met	Metro	Non-Met
M-S 6A-Mid	1858	1525	333	82	18
M-F 6A-10A	837	765	72	91	9
M-F 10A-3P	516	410	106	79	21
M-F 3P-7P	762	566	196	74	26

Because the cume composition percent for the
station for Monday-Friday 6A-10A is only 50% of
that computed for Total Week, the programming
offered by the station during that daypart is
relatively unappealing to the Non-Metro listeners.
As the Monday-Friday day progresses though, the
programming becomes increasingly appealing to
that Non-Metro cume. This change in appeal may
have been intended by the station in its program-
ming strategy, or, it may not have been intended
and is a result of execution rather than a plan.

Either way, whether intentionally or unintentional-
ly, the station decisions or execution have affected
the time spent listening by the cume. Because
the station is providing programming that is not
effectively appealing to some portion—of the—cume
(for example, the Non-Metro listeners during
Monday-Friday 6A-10A), the time that cume will
spend listening to the station has been reduced.

When describing Arbitron's local market report in Chapter Five, we noted that you could readily obtain, from the market report, details about how the radio users in your market use radio. That detail is only provided for the Metro Survey Area (and, in some markets, the ADI survey area). If your station's cume includes a large Non-Metro audience, drawing definitive conclusions about the use of your station in the context of how radio is used in your market becomes more difficult. Because radio usage in the Metro of your market represents the closest available usage estimates for radio listening in the entire market, you can still use them as a guide to determining how effectively your station is performing. Just realize the comparison is not perfect.

Who Comprises the Cume -- Sex/Age Distribution
(RRC Data Table 5 and Top Portion of Table 4)

In addition to Persons 12+ estimates, most stations receive audience estimates for Men 18+ and Women 18+ too. The only missing component, then, of the 12+ estimate is Teens, but these estimates are available by extrapolation. The difference between Persons 12+ and the sum of Men 18+ and Women 18+ is the Teen, or 12-17, audience estimate.

Our sample station with the Persons 12+ TSA Cume of 185,800 persons, also has estimates of 106,000 TSA Men 18+ listeners and 69,700 TSA Women 18+ listeners. We can, given this information, determine the size of the TSA Teen cume:

```
              Men 18+ Cume    106,000
      plus Women 18+ Cume  +   69,700
   equals Adults 18+ Cume    175,700

          Persons 12+ Cume    185,800
      less Adults 18+ Cume  -  175,700
   equals Teen (12-17) Cume    10,100
```

Many stations also receive audience estimates for
more discrete sex/age groupings than Men and
Women 18+.   The most commonly available are
Males and Females 12-24, 25-49 and 50+.   When
these sex/age groups do not overlap, they can be
combined to show listening for broader demo-
graphics.   For example, Men and Women 25-49
can be added to show Adults 25-49 while Men 25-
49 combined with Men 50+ results in Men 25+.
Males 12-24 plus Females 12-24 less Teens 12-17
results in Adults 18-24, additive to Adults 25-49
for an Adults 18-49 estimate.

That a station appeals to either Males or Females,
and either younger or older age-groups is directly
evident from the size of the cume for the varied
demographics.   However, comparing the Cume
Ratings, rather than simply the Cume Persons, for
the different demographics gives us a better meas-
ure of appeal, one that adjusts for the difference
in the estimated population size for each demo-
graphic.

To compute a Cume Rating, if it's not already
provided in the audience estimates, as it would
not be for a derived demographic cume estimate
such as Men 25+, you must determine the popula-
tion of the demographic group.   This is done by
summing the population estimates, from Page 3A
of the local market report or from the AID or
PSA report printout, for the sex/age groups that
comprise the broader demographic.   The Cume
Rating then is the Persons estimate divided by
the Population estimate, expressed as a percent.

Before examining the demographic cume ratings,
we knew that the station had more Men 18+ than
Women 18+ listeners.   However, we were unaware
that the universe for Women was larger than that
for Men.   The difference in the Male/Female
Cume Ratings for the station, shown in Table 8.3,
more clearly illustrates the appeal of the station
to Male rather than Female listeners.   An even
better case is the difference between the Adults
25-49 and Adults 50+ estimates.   The size of the

25-49 cume is obviously much larger than the size
of the 50+ cume. Not until we place the size of
the cume in the context of the size of the popula-
tion are we able to see that the station appeals
almost equally, with a small difference in Cume
Ratings, to the 25-49 and 50+ demographics.

Table 8.3
Cume Rating Percents for a Sample Station
Monday-Sunday 6AM-Midnight

	Population	Cume Persons	Cume Rating
TSA Persons 12+	4,125,300	185,800	4.5
TSA Men 18+	1,759,800	106,000	6.0
TSA Women 18+	1,902,300	69,700	3.7
TSA Teens	463,900	10,100	2.2
TSA Persons 12-24	1,045,600	11,200	1.1
TSA Adults 25-49	2,009,700	115,700	5.8
TSA Adults 50+	1,063,800	58,800	5.5

In order to more easily grasp the differences in
appeal, it may be helpful to create an Index of
Demographic Appeal. Given an array of various
sex/age groups, you can compute the contribution
of that sex/age group to the Total Persons 12+
estimate, whether the estimate is population or
audience. The percent of your station's 12+ cume
for a demographic divided by the percent of the
12+ population for that demographic results in an
index that is relative to population size.   For
our sample station, we have shown the results of
the calculations in Table 8.4.

Table 8.4
Sample Station Demographic Appeal:
Cume Indexed to Population
Monday-Sunday 6AM-Midnight

	Percent of 12+ Pop	Cume Persons	Percent of 12+ Cume	Index
TSA Persons 12+		185,800		
TSA Men 18+	43	106,000	57	133
TSA Women 18+	46	69,700	38	83
TSA Teens	11	10,100	5	45
TSA Persons 12-24	25	11,200	6	24
TSA Adults 25-49	49	115,700	62	127
TSA Adults 50+	26	58,800	32	123

Like the geographic composition percents that we
looked at above, these demographic indices of
appeal can be examined for each daypart.   If the
programming offered for each daypart was equally
appealing to a demographic, then the demographic
index for that daypart would match the demo-
graphic's Total Week index.   This statement,
though, would only be true if radio use by demo-
graphic was the same for all dayparts.   An exam-
ination of radio use in the local market report
will indicate that, by daypart, different sex/age
groups use radio to varying degrees.   The best
way to create indices of demographic appeal is to
compute the indices relative to the demographic
composition of the radio audience,* since it may be

---

*The RRC, currently in its Data Tables for
full members, only creates indices of demographic
appeal relative to population.   It is the only
information available to the RRC when the sta-
tion's Data Tables are processed.   Radio use, by
demographic, is not available via AID, but only
from the local market report.

different than the demographic composition of the
population.

For each daypart that you're interested in examin-
ing, you must determine what percent of that
daypart's radio listeners 12+ is attributable to
each demographic. Your station's 12+ cume can
be apportioned the same way. The station's demo-
graphic contribution percent can then be divided
by the contribution percent of that demo to the
total radio audience to create an index of demo-
graphic appeal relative to radio use.

For our sample station, we have performed the
computations for Total Week and the four Monday-
Friday dayparts, illustrated in Table 8.5. The
radio use percent distributions are based on the
Metro Survey Area from the local market report,
even though the station demographics are TSA.
While the indices of appeal are not "purely" accu-
rate because of the different geographies used in
the computations, those indices are the best avail-
able measure we have. Population indices are
also displayed in Table 8.5, for comparison.

Recall that the absolute size of the sample sta-
tion's cume by demographic indicated that the
station was clearly reaching more 25-49 year-olds
than any other demographic group. However,
when we adjusted for the different population
sizes of the demographic groups, we noted that the
penetration of the station in the Adults 50+ demo-
graphic approached that reported in the 25-49
demo. This was evident by a comparison of demo-
graphic cume ratings or by a comparison of indices
of appeal based on population size.

However, when we examine how Adults 25-49
versus Adults 50+ use radio, we come up with a
different picture. The radio use and population
indices are different, in Table 8.5, because radio
use by demographic, in total and by daypart, is
different. The sample station is doing a better job
of capturing listening from those Adults 50+ who
use radio, Total Week, than from those Adults 25-

49 who use radio. The same is true for every
Monday-Friday daypart: the radio use index for
Adults 50+ exceeds the radio use index for Adults
25-49, even during the 6-10A daypart when the
25-49 population index exceeds the 50+ population
index.

Table 8.5
Sample Station Demographic Appeal:
TSA Cume Indexed to Metro Radio Use and TSA Population

| | ------ TSA Adults 25-49 ------ | | | | ------- TSA Adults 50+ ------- | | | |
| | Pct of 12+ | | Radio | | | Pct of 12+ | | Radio | |
	Radio Cume	Station Cume	Use Index	Pop Index	Radio Cume	Station Cume	Use Index	Pop Index
M-S 6A-Mid	50	62	124	127	24	32	133	123
M-F 6A-10A	51	63	124	129	24	32	133	123
M-F 10A-3P	50	52	104	106	27	35	130	135
M-F 3P-7P	51	60	118	122	23	38	165	146
M-F 7P-Mid	48	57	119	116	20	35	175	135

When we look at the population indices by day-
part, it appears that our sample station does a
better job of appealing to its Adults 25-49 listen-
ers in the morning daypart than it does Total
Week, since the population index for that daypart
(129) is slightly higher than the Total Week popu-
lation index (127). But, when we take radio use
into account, and recognize that Adult 25-49 radio
users are most likely to use radio in that morning
daypart, we can see that the station's apparent
morning appeal to the Adults 25-49 demographic
is more a function of radio use by that demo-
graphic than programming appeal. In other words,
because there are more Adult 25-49 users (in this
market for this survey period), it is highly likely
there will be more 25-49 listeners to the station.

If our sample station is targeting 25-49 year-olds,

it has a problem that is not readily evident from looking at absolute size of the cume or even the cume once it has been adjusted for population size. The appeal of the station is relatively stronger to Adults 50+ than the target Adults 25-49. The relative appeal to Adults 50+ varies by daypart, with Monday-Friday 7P-Midnight being the most appealing. The midday daypart proves to be less appealing to Adults 50+ than the later daypart, even though the size of the cume and cume rating for midday and 7P-Midnight are just about the same, because there are more Adult 50+ radio users available (ie., listening to radio) 10A-3P than at night.

When Does the Cume Listen -- by Weekpart
(RRC Data Tables 6 and 7)

Some portion of your station's cume listens during the week while some portion listens on the week-ends. Given a cume persons estimate for Total Week, Monday-Friday 6A-Midnight and Weekend 6A-Midnight, you can estimate how much of the cume is attributable to each of the weekparts, and, how many people use your station in both weekparts or are exclusive to only one of the two weekparts. The sum of the cumes for Monday-Friday and Weekend less the Total Week cume is equal to the cume that listens both on weekdays and on the weekend.

Returning to our sample station, and its TSA Persons 12+ cume estimates: the station has 155,800 Monday-Friday 6A-Midnight listeners. These listeners account for 84% of the Total Week cume of 185,800. Weekend listeners (86,800) account for 47% of the Total Week cume. These weekpart utilization percents are a little different from what we have noted for public radio in general (Table 8.6).

Table 8.6
RRC Norms: Weekpart Contribution Percents
to Monday-Sunday 6AM-Midnight

TSA Total 12+

	AM Stations Mean	Median	FM Stations Mean	Median
Monday-Friday 6A-Mid	84	85	84	86
Weekend 6A-Mid	43	41	58	58

Based on Spring 1985 RRC Full Member 112 station sample

Whenever the sum of the two weekpart contribu-
tion percents exceed 100%, there are some listeners
who listen both on the weekend and on weekdays.
The estimated number of TSA Persons 12+ who
listen to both weekparts, for our sample station,
can be computed:

```
        Monday-Friday 6AM-Midnight Cume    155,800
         plus Weekend 6AM-Midnight Cume +   86,800
                                           242,600
  less Monday-Sunday 6AM-Midnight Cume -   185,800
equals Cume that Uses Both Weekparts(Flow)  56,800
```

The cume that uses both weekparts (56,800) ac-
count for 31% of the Total Week cume of 185,800.
Therefore, 69% of the cume only listens either
during the week or on weekends, but not both.
Once again, by extrapolation we can determine
what portion of the cume are Monday-Friday only
users and what portion of the cume are Weekend-
Only users, by subtracting the Flow Cume from

the Weekpart Cume:

```
        Monday-Friday 6AM-Midnight Cume      155,800
   less Cume that also listens Weekend -   56,800 (Flow)
  equals Monday-Friday 6A-Mid Only Cume      99,000

           Weekend 6AM-Midnight Cume         86,800
   less Cume that also listens Weekday -   56,800 (Flow)
  equals Weekend 6AM-Midnight Only Cume      30,000
```

With these persons estimates, we can come up with a picture of the Total Week cume (and each of the weekpart cumes) describing how the listeners use the station, illustrated in Table 8.7.

Table 8.7
Percent Exclusive and Percent Flow by Weekpart
for a Sample Station

TSA Total 12+

	M-S 6A-Mid	M-F 6A-Mid	S-S 6A-Mid
Weekpart Cume	185,800	155,800 (84%)	86,800 (47%)
M-F Only Cume %	53	64	
S-S Only Cume %	16		35
Flow (Use Both) %	31	36	65

Public radio stations, in general, in Spring 1985 showed a different distribution of their Total Week listeners, illustrated in Table 8.8.

Table 8.8
RRC Norms: Weekpart Exclusive and Flow
Percent of Monday-Sunday 6AM-Midnight Cume
TSA Total 12+

	AM Stations		FM Stations	
	Mean	Median	Mean	Median
M-F Only Cume %	57	59	42	42
S-S Only Cume %	16	15	15	14
Flow (Use Both) %	27	26	43	43

Based on Spring 1985 RRC Full Member 112 station sample

When we say, for our sample station in Table 8.7,
that 84% of the Total Week cume listens Monday-
Friday we are also saying that 16% of the Total
Week cume does NOT listen Monday-Friday.
When we note that 64% of Monday-Friday listeners
listen only during the week, this means that 64%
of the weekday listeners do NOT listen on the
weekend.   When evaluating a station's Weekday/
Weekend Flow, overall radio listening patterns in
the market should be considered.

By examining the Metro Survey Area Radio Cume
totals in the local market report, we can estimate
if radio listeners are more likely to listen on
weekdays or weekends or both.

Clearly, given the data in Table 8.9, most of the
people who use radio in this market listen both
weekdays and weekends.   The sample station's
listeners are only 36% percent as likely to use the
station during both weekparts (31% station flow
divided by 86% total radio flow) as radio users
are likely to listen to radio.

Table 8.9
Percent Exclusive and Percent Flow by Weekpart
for a Sample Market

Metro Total 12+

	M-S 6A-Mid	M-F 6A-Mid (99%)	S-S 6A-Mid (87%)
M-F Only Cume %	13	13	
S-S Only Cume %	1		1
Flow (Use Both) %	86	87	99

The fact that only 36% of the station's Monday-Friday listeners also listen on the weekend (Table 8.7), while 87% of Monday-Friday radio users listen on the weekend (Talbe 8.9) gives us an indication that 51% (87 less 36) of the station's Monday-Friday cume is listening to one or more other stations on the weekend in lieu of the sample station. Those other stations must be offering programming, on the weekend, that is more appealing to the sample station's Monday-Friday cume than the sample station is. These same percent comparisons can be performed on the station's weekend cume: since 99% of weekend radio listeners also listen during the week while 65% of the sample station's weekend listeners listen to the station during the week, 34% of the station's weekend listeners are presumably listening to radio, but only to other stations, during the weekday period.

The analyses of the Total Week cume distribution by weekpart can be performed for any geography or demographic for which you receive, or have derived, audience estimates. While radio use is only available for the Metro (or ADI) survey area, it can still be used as a guideline for determining your station's effectiveness in promoting its audi-

ence across weekparts, even if the station esti-
mates that you are examining are TSA estimates.

When Does the Cume Listen -- By Daypart
(RRC Data Table 7)

Most stations receive audience estimates for the
four major Monday-Friday dayparts. Many also
receive daypart breakdowns for Saturday and
Sunday. Your station's Total Week cume can be
analyzed by the dayparts that the cume listened,
in the same way that we analyzed weekpart cume
composition. But determining what percent of your
station's Total Week cume listens during a Mon-
day-Friday daypart and comparing that to a radio
use cume contribution percent is not as helpful as
computing Monday-Friday daypart utilization by
the weekday cume (eliminating weekend only users
from the base), or weekend daypart utilization by
the weekend cume (eliminating weekday only users
from the base).

The Monday-Friday 6AM-Midnight cume for the
average (mean) and typical (median) public radio
stations, in Spring 1985, showed the daypart uti-
lization percents displayed in Table 8.10.

The computation for the daypart cume contribution
percents is a straightforward one: divide your
station's Monday-Friday daypart cume by the
Monday-Friday 6AM-Midnight cume. The result
tells you what percent of your weekday listeners
listen to the station in a given daypart. For our
sample station, we have displayed the results of
the calculations in Table 8.11.

The contribution percents are simply a reflection
of the size of the cume. Because the sample
station's 6A-10A cume is largest, the contribution
percent for that daypart is largest. But radio
listeners are not likely to listen to radio at the
same rate all day. Judging station performance is
best done by comparing station contribution per-

cents to contribution percents that have been
computed for radio use in the market.

Table 8.10
RRC Norms: Daypart Contribution Percents
Percent of Monday-Friday 6AM-Midnight Cume

TSA Total 12+

	AM Stations		FM Stations	
	Mean	Median	Mean	Median
6AM-10AM	61	66	58	58
10AM-3PM	60	57	48	50
3PM-7PM	53	48	60	60
7PM-12Mid	7	0	41	40

Based on Spring 1985 RRC Full Member 112 station sample

Table 8.11
Cume Contribution by Daypart for a Sample Station
TSA Total 12+

Monday-Friday 6AM-Midnight Cume: 155,800

	Cume Persons	Percent of Mon-Fri Cume
6A-10A	83,700	54
10A-3P	51,600	33
3P-7P	76,200	49
7P-12Mid	53,100	34

Using the local market report, we can compute,
for each Monday-Friday daypart, the percent of
the Monday-Friday 6A-Midnight cume that utilized
the daypart.   We can then compare station utiliza-
tion to radio utilization by creating an index
(station percent divided by radio percent).   The
results for our sample station are displayed in
Table 8.12.

Table 8.12
Cume Contribution by Daypart
for a Sample Station and a Sample Market Compared
Monday-Friday 6AM-Midnight

Station Estimates - TSA Total 12+
Radio Estimates - Metro Total 12+

| | Percent of Mon-Fri Cume | | |
	Radio	Station	Index
6A-10A	91	54	59
10A-3P	68	33	49
3P-7P	85	49	58
7P-12Mid	65	34	52

Ninety-one percent of all weekday radio listeners,
in the sample market during the reported survey,
listen to radio sometime during the 6A-10A day-
part.   The station attracted 54% of its weekday
listeners to the morning daypart, resulting in an
index of utilization of 59%.   Note how the index
adjusts for different radio use levels in different
dayparts.   Although the station's cume 7P-Midnight
is much smaller than the morning cume, when
radio use is taken into account, the station is
nearly as effective in attracting its listeners to
the night daypart as the morning daypart (52%
effectiveness versus 59%).   We can expect the
station's cume to be largest in the morning be-

cause the largest percent of weekday radio users
are listening in the morning.

Note that the station captures 54% of its weekday
audience in the 6A-10A daypart, while radio in
total captures 91%, a difference of 37 percentage
points.   The total radio use estimates strongly
suggest that the missing 37 percent are listening
to radio, but to other stations in lieu of the
sample station; they have found programming more
appealing elsewhere.   Consider the difference
between the radio use and station use contribution
percents as lost opportunity.   A quick review of
the two columns of percents (Radio and Station)
in Table 8.12 will show that the greatest difference
is in the 6A-10A daypart.   Even though the station
was more efficient in capturing its weekday listen-
ers in the morning than in any other daypart, it
also "lost" the greatest number of listeners to
other stations in that daypart, listeners that were
available to radio but failed to be attracted to
the sample station.

Like the analyses of weekparts, the weekday (or
weekend) cume distribution by daypart analyses
can be performed for any geography or demo-
graphic for which you receive, or have derived,
audience estimates.   While radio use is only avail-
able for the Metro (or ADI) survey area, it can
still be used as a guideline for determining your
station's effectiveness in promoting its audience
across dayparts, even if the station estimates that
you are examining are TSA estimates.

We cannot tell from this data which of the week-
day listeners most likely failed to listen in the
morning, whether it was those that listen midday,
or afternoon, or evening.   Conversely, we cannot
tell between which dayparts audience flowed (ie.,
are the midday station listeners those that had
listened in the morning or not?).   Therefore, a
programming strategy to effectively promote audi-
ence recycling across dayparts is not readily
apparent.   While promoting forward is always a
good strategy, the sample station's data indicate

that promotion to morning is required too.   Infor-
mation to determine which daypart listeners are
least likely to also listen in the morning is avail-
able from either the Programmer's Package, a
tabulation from a Mechanical Diary, or from addi-
tional Arbitron audience estimates that allow
tabulation of daypart crossover.

The daypart cumes do provide you with the ability
to compute number of dayparts utilized by the
average listener.   The sum of the Monday-Friday
daypart cume contribution percents divided by 100
results in an estimate of Monday-Friday dayparts
used by the average Monday-Friday listener.
Working with the contribution percents for our
sample station, from Table 8.12:   the sum of the
station contribution percents is 170, resulting in a
"dayparts used" estimate of 1.7.   This, too, can be
compared to number of dayparts used by the
average weekday radio listener in the sample
market: 3.1.   Of course, the maximum number of
dayparts that can be used, given these estimate
breakdowns, is four.

Also available to many public radio stations, but
not reported in the local market report, are Mon-
day-Sunday 24 Hours estimates.   Comparison of
these estimates to the Monday-Sunday 6AM-Mid-
night data allows you to estimate the size of the
Overnight cume (Midnight-6AM) that does not
listen during the standard broadcast week.   Mon-
day-Sunday 24 Hour cume less Monday-Sunday
6A-Midnight cume equals the estimated number of
people who only use your station between the
hours of Midnight and 6AM.

How Long Does The Cume Listen
(RRC Data Table 3)

Your station's Average Quarter-Hour estimate is a
reflection of the time spent listening by the
cume.   Because it represents the number of listen-
ers tuned in to your station during an average

quarter-hour (in the week or in a smaller daypart),
the multiplication of that estimate by the number
of quarter hours that your station was broadcast-
ing during the daypart yields the total number of
quarter-hours of listening done by your cume.
Divide that total number of quarter-hours of
listening by the cume persons estimate and you
derive the average time spent listening, in quarter-
hours. When you divide the average time spent
in quarter-hours by four, you determine average
time spent listening by the cume, in hours.

Public radio stations, overall, show very short
time spent listening for the Total Week. Compare
the Spring 1985 estimates, in Table 8.13, to those
reported for the average commercial station by
format in Chapter 4.

Table 8.13
RRC Norms: Average Time Spent Listening in Hours
TSA Total 12+

	AM Stations Mean	Median	FM Stations Mean	Median
M-S 6AM-12Mid	5.7	5.5	7.8	7.6
M-F 6AM-12Mid	5.6	5.4	6.7	6.7
S-S 6AM-12Mid	2.5	2.5	3.5	3.5

Based on Spring 1985 RRC Full Member 112 station sample

To compute average time spent listening by the
cume, you need three pieces of information:
first, the size of the cume (cume persons esti-
mate); second, the AQH persons estimate; and
finally, the number of quarter-hours the station
broadcast (the potential number of quarter-hours
the cume could listen). The first two pieces of

data are a given; they are always included in the
audience estimates you receive.   Only the number
of daypart quarter-hours must be computed.   It is
the result of: the number of quarter-hours in
each hour (4) times the number of hours per day
in the daypart times the number of days in the
daypart that the station was on the air.

For stations that are broadcasting all hours of
the week, Monday-Sunday 6AM-Midnight, Table
8.14 shows the quarter-hour multipliers for each
of the standard dayparts:

Table 8.14
Number of Quarter-Hours in Standard Dayparts

Daypart	Number of Quarter-Hours
Mon-Sun 6AM-Mid	504
Mon-Fri 6AM-Mid	360
Mon-Fri 6AM-10AM	80
Mon-Fri 10AM-3PM	100
Mon-Fri 3PM-7PM	80
Mon-Fri 7PM-Mid	100
Weekend 6AM-Mid	144
Sat or Sun 6AM-Mid	72
Sat or Sun 6AM-10AM	16
Sat or Sun 10AM-3PM	20
Sat or Sun 3PM-7PM	16
Sat or Sun 7PM-Mid	20

Stations that are not on the air during all quar-
ter-hours of the broadcast week, Monday-Sunday
6AM-Midnight, must compute on-air quarter-hours

for any daypart that encompasses time that they were off the air. For example, a station broad-casting Monday-Sunday 6AM-6PM will have to compute on-air time for the 6A-Midnight dayparts plus the 3P-7P dayparts. The Monday-Sunday 6A-Midnight calculation will result in 336 quarter-hours; Monday-Friday 3P-7P equates to 60 quarter-hours. In order to compute and understand time spent listening, you must know how many quarter-hours you are on the air.[7]

Our sample station is on the air during all quar-ter-hours of the broadcast week. Its average quarter-hour and cume estimates can be examined to compute Total Quarter-Hours of Listening and Average Time Spent Listening for some of the major dayparts, as displayed in Table 8.15.

Sometimes, when looking at Average TSL, the numbers can be confusing. For example, how can an average TSL, Monday-Friday, of 5.1 hours and an average TSL, Weekend, of 3.4 hours result in a Total Week TSL of only 5.9 hours? It's simply because the cumes for each daypart are composed of different listeners and cume is the basis for the calculation. If you recall from Table 8.7, this station had a significant Weekday only and Week-end only audience. The Weekday only audience,

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[7]When the RRC computes average TSL for its full members, we must estimate number of quarter-hours on the air since we don't know the broadcast schedule for every public radio station. For any station whose Total Week audience esti-mates were adjusted according to the AID output, we examine the hourly data to see for which hours audience estimates were adjusted. If the station shows no audience during an adjusted hour, we assume the station is off the air. If there is some audience during an adjusted hour, we assume the station was on the air for one-half of the hour. Therefore, a TSL estimate that you compute for your station (based on actual times) may be fractionally different from the RRC computation.

for example, is included in the Weekday average
TSL but contributes zero quarter-hours of listening
on the weekend.   While this zero contribution
does not hurt Weekend TSL, because those listen-
ers are not counted in the Weekend Cume, it does
hurt Total Week TSL since none of the weekend
quarter-hours (144) were used by that Weekday
only cume.

Table 8.15
Time Spent Listening to a Sample Station
TSA Persons 12+

Daypart	AQH Persons	Total QH's of Listening	Cume Persons	Average TSL in Hrs
M-S 6A-Mid	8,700	4,384,800	185,800	5.9
M-F 6A-Mid	8,900	3,204,000	155,800	5.1
M-F 6A-10A	14,000	1,120,000	83,700	3.3
M-F 10A-3P	6,500	650,000	51,600	3.1
M-F 3P-7P	13,300	1,064,000	76,200	3.5
M-F 7P-Mid	3,800	380,000	53,100	1.8
S-S 6A-Mid	8,100	1,166,400	62,100	3.4

Comparison of Total Quarter-Hours of Listening,
though, does show us that time spent listening by
daypart results in time spent listening for the
week.   The sum of the Total Quarter-Hours for
the Monday-Friday dayparts approximates the sum
for Monday-Friday 6A-Midnight.   That sum plus
the Weekend Total Quarter-Hours comes close to
the Total Week Total Quarter-Hours of Listening.
The only reason that the numbers do not sum
exactly is due to rounding of the AQH estimates
to the nearest one hundred persons.

When comparing average time spent listening
across dayparts, you need to take into account
the different lengths of the dayparts. Our sample
station during the midday daypart shows an Aver-
age TSL of 3.1 hours, nearly as good as the 3.3
shown in the morning daypart. But the morning
daypart is a shorter daypart than midday; there is
less time available to listen. Because the midday
daypart is composed of more hours available to
listen, we should expect that average time spent
listening by the cume will be longer. To compare
TSL across dayparts, then, we should adjust for
the length of the daypart. This is done in Table
8.16. A daypart efficiency percent has been com-
puted, which is simply average TSL divided by
number of hours available to listen. When per-
forming this computation, always take into account
only the number of quarter-hours (or hours, as in
Table 8.16) that the cume can listen to your
station.

Table 8.16
Daypart Efficiency Percents for a Sample Station
TSA Total 12+

Daypart	Average TSL in Hours	Hours Available To Listen	Daypart Efficiency Percent
M-S 6A-Mid	5.9	126	4.7
M-F 6A-Mid	5.1	90	5.7
M-F 6A-10A	3.3	20	16.5
M-F 10A-3P	3.1	25	12.4
M-F 3P-7P	3.5	20	17.5
M-F 7P-Mid	1.8	25	7.2
S-S 6A-Mid	3.4	36	9.4

Taking into account the disparity in daypart
lengths, the daypart efficiency percents allow you
to compare average TSL across dayparts, and
highlight differences not readily apparent from
the TSL estimates alone. For our sample station,
above, what is only a minor difference between
morning and midday TSL (two-tenths of an hour)
is shown as a wider discrepancy when the effi-
ciency percents are compared.   Likewise, note
that the average TSL on the weekend, although
shorter than the average Weekday TSL, is actually
a better performance.

There's one more factor to take into account when
evaluating TSL and that is radio use in the mar-
ket.   Suppose, for example, in our sample station's
market, average TSL to radio was shorter in the
midday daypart than in the morning.   Then, despite
the longer daypart, we could justify average TSL
to the station being shorter in the midday day-
part.   In order to test for the variable of radio
use in the market, we need to determine average
TSL to Radio by daypart and create daypart effi-
ciency percents, based on the Metro Totals in the
local market report.   Comparison of the station's
efficiency versus radio's efficiency in the market
allows us to determine in which dayparts the
station is actually performing the best -- see
Table 8.17.

[Note that the Efficiency Index can also be com-
puted by dividing station average TSL by average
TSL to radio, by daypart.   This is okay as long as
you do not lose sight of the fact that different
length dayparts should have different TSL's,
whether it be to radio or to a station.]

From Table 8.17, it is clear that radio listeners in
this market listen longer during the midday daypart
than they do in other dayparts, but that the
average length of listening is not quite as long as
could be expected given the number of hours
available to listen in the daypart.   Radio users in
this market listen relatively longer during the
morning than midday daypart.

Table 8.17
Sample Station Daypart Efficiency
Indexed to Radio Efficiency
Station Estimates - TSA Total 12+
Radio Estimates - Metro Total 12+

Daypart	Average TSL in Hours		Daypart Efficiency Percent		Efficiency Index
	Radio	Station	Radio	Station	
M-S 6A-Mid	23.8	5.9	18.9	4.7	25
M-F 6A-Mid	18.1	5.1	20.1	5.7	28
M-F 6A-10A	6.2	3.3	31.0	16.5	53
M-F 10A-3P	7.5	3.1	30.0	12.4	41
M-F 3P-7P	5.1	3.5	25.5	17.5	69
M-F 7P-Mid	4.3	1.8	17.2	7.2	42
S-S 6A-Mid	6.6	3.4	18.3	9.4	51

When radio use is taken into account, a couple of
things jump out from the data: the strong per-
formance of the station in attracting long TSL in
the 3P-7P daypart; and, that the shortest TSL
daypart (7P-Mid) is actually a better performance
for the station than the midday daypart. Average
TSL by daypart should always be judged relative
to radio use.

In Chapter 3, we discussed the distribution of
Time Spent Listening to Radio, noting that some
portion of radio listeners contribute the bulk of
the quarter-hours of listening and that the average
TSL to radio was higher than the amount of time
spent listening by the typical radio user. Time
Spent Listening to radio stations is no different.
The average Time Spent Listening by a station's
cume will be much higher than the time spent by

the typical station listener.

The expected distribution of quarter-hours of
listening by the cume, once that cume has been
divided into equal quintiles (20% of the cume),
ranked based on Time Spent Listening, was devel-
oped by Westinghouse in the creation of its Reach
and Frequency estimator.   It is shown in Table
8.18.

Table 8.18
Expected Distribution of Listening to a Station

Quarter-Hour Contribution
to Total Station Listening

1st Quintile	60%	------ Heaviest Users
2nd Quintile	21%	
3rd Quintile	11%	------ Typical Users
4th Quintile	6%	
5th Quintile	2%	------ Lightest Users

We expect that the heaviest listening 20% of a
station's cume will contribute 60% of the total
quarter-hours of listening to the station.   The
bottom two quintiles, representing 40% of the
cume, contribute less than 10% of the station's
total time spent listening.

We can apply this expected distribution of listen-
ing to any station's audience estimates.   For our
sample station, we note from Table 8.15, that the
Total Week AQH estimate of 8,700 persons equates
to 4,384,800 quarter-hours of listening and an
average TSL of 5.9 hours for the cume of 185,800
persons.   By dividing the cume into equal 20%
segments of 37,160 persons, called quintiles, and
applying the expected distribution of listening
percents to the total quarter-hours of listening to

the station, we can compute Time Spent Listening
by the heaviest listeners to the station, the light-
est, and the typical listeners.

Table 8.19
Average Time Spent Listening to a Sample Station
by Listener Quintile Segment
TSA Total 12+, Monday-Sunday 6AM-Midnight

Average TSL to Station
in Quarter-Hours

1st Quintile	71 ------	Heaviest Users
2nd Quintile	25	
3rd Quintile	13 ------	Typical Users
4th Quintile	7	
5th Quintile	2 ------	Lightest Users
Average	23.6 (5.9 Hours)	

The average TSL to the sample station of 5.9
hours is generated despite the fact that 40% of
the cume (the bottom two quintiles) listens for
less than two hours to the station in an average
week.   The "typical" listener, represented by the
middle quintile, listens slightly more than three
hours per week.   It is the heaviest users of the
station who pull up the average time spent listen-
ing.

Performing this kind of computation, once in a
while, can serve as a reminder that much of the
cume does not listen to the station for substantial
lengths of time.   We expect that 60% of the cume
(Quintiles 3 through 5) will listen less than the
"average" station listener.   Be aware that these
are the expected, not actual, distributions of time
spent listening.   Actual time spent listening by
quintile segment is only available from Arbitron's

Programmer's Package, or by tabulation of a
Mechanical Diary (see Chapter 9). For those
stations that really believe that their listeners
exhibit different behavior patterns than the normal
pattern shown above, we ask you to examine the
actual distribution reported for the typical public
radio station shown in Table 9.4.

These same kinds of computations can be per-
formed for any demographic or geography, enabling
you to note differences across demographic groups.
However, if you simply want to make a quick
comparison of the TSL by different demographics,
there are other tools that will allow you to
measure the relative differences in TSL by demo
or geography. These tools are the AQH Contribu-
tion Percents and Turnover Ratios.

AQH Contribution Percents
(RRC Data Table 4)

Earlier in this Chapter, we discussed computing the
contribution of a demographic or geography to
the Total 12+ Cume Persons estimate for the
station for Total Week and/or by daypart. The
same extrapolations and computations can also be
performed based on the Total 12+ Average Persons
estimates. We noted in our Chapter on the AID
Market Summary Report that a comparison of the
AQH and Cume Contribution Percents tells us
something about average TSL for the demographic.

When the AQH and Cume contribution percents
for a demographic are equal, the average TSL by
that demographic is equal to the average TSL for
Total Persons 12+. When the AQH contribution
percent exceeds the Cume contribution percent,
then the average TSL by the demographic is
greater than the Total 12+ average. Likewise, an
AQH contribution percent that is smaller than the
Cume contribution percent indicates that the
demographic is reporting shorter length of listening
than the average Person 12+.

When comparing AQH contribution percents for a
demo across dayparts, or even when comparing
the difference between the AQH and Cume contri-
bution percents across dayparts, always bear in
mind that different demographics use radio differ-
ently at different times of the day. It may be
seem complicated, but, eventually you have to
compare station performance to radio use for the
target demographic to judge the effectiveness of
the station.

Turnover Ratios
(Top Portion of RRC Data Table 2 and Bottom
Portion of Table 3)

A Turnover Ratio is the division of the Cume
Persons estimate by the AQH Persons estimate for
a daypart.   The ratio is an expression of the
number of totally different quarter-hour audiences
required to arrive at the cume audience.   A cume
estimate of 185,800 persons and an AQH estimate
of 8,700 persons yields a Turnover Ratio of 21.4.
This Turnover Ratio means that 21.4 unique quar-
ter-hour cumes are required to build the daypart
cume. The Turnover Ratio (T/O) is an inverse
measure of TSL.   The more quarter-hours that are
required to arrive at the cume, the shorter the
average time spent listening must be by that
cume.

Looking at Total Week estimates for our sample
station, we can compare Turnover ratios and Time
Spent Listening by demographic.   Examination of
the Turnover Ratios and the Average TSL estimates
in Table 8.20 should help to make it clear that
the higher the Turnover Ratio, the shorter the
average TSL.

Because the Turnover Ratio is the kind of calcu-
lation that you can approximate in your head, it
is an easy way to measure relative TSL across
demographics.   Simply by noting the relationship
of the AQH and Cume Persons estimate for Men

25-49 and 50+, and computing rough turnovers for each (35 into 694 is greater than 27 into 366), we would know that Men 50+ listen, on average, longer than Men 25-49.   Turnover relationships can also be quickly visualized in another way. Using the Men and Women 18+ estimates for our sample station, the AQH for Men is nearly three times greater than the AQH for Women (63 compared to 23), while the Cume for Men is less than twice that among Women (1160 versus 697).   This must mean that Men 18+, on average, listen the longest, exactly what you find after computing either the TSL or Turnover estimates.

Table 8.20
Turnover by Demo for a Sample Station
TSA, Monday-Sunday 6AM-Midnight

Demographic	AQH Persons	Cume Persons	Avg TSL in Hours	Turnover Ratio
Total 12+	8,700	185,800	5.9	21.4
Men 18+	6,300	116,000	6.8	18.4
Women 18+	2,300	69,700	4.2	30.3
Men 25-49	3,500	69,400	6.4	19.8
Men 50+	2,700	36,600	9.3	13.6

Turnover is also a very useful calculation when comparing Average Time Spent Listening across dayparts. Let's look first at persons estimates from a Saturday daypart, in Table 8.21.

During the Saturday 6A-10A daypart, the Turnover Ratio is 2.9.   There are 2.9 different sets of listeners that make up the daypart cume.   During the Saturday midday daypart, there are only 2.3

different sets of listeners that comprise the cume.
Therefore, average TSL during the Saturday 10A-
3P daypart is longer than during the morning
daypart.

Table 8.21
Turnover for Selected Dayparts for a Sample Station
TSA Persons 12+

	AQH Persons	Cume Persons	Turnover Ratio
Sat 6A-10A	9,500	27,600	2.9
Sat 10A-3P	15,200	35,100	2.3

Since the midday daypart is longer than the morn-
ing daypart by one hour, as we've noted above,
we expect TSL to be longer. But the Turnover
Ratio automatically adjusts for the different length
of the dayparts. The Saturday 10A-3P cume does
listen longer, on average; in addition, that cume
listens for a greater percent of the available
quarter-hours than the 6A-10A cume.

Knowing that there are 16 quarter-hours in the
Saturday morning daypart, we can compute that
the audience turns over every 5.5 quarter-hours
(16 quarter-hours in the morning daypart divided
by the daypart Turnover Ratio of 2.9) or every
1.4 hours -- this is equal to the average TSL of
the daypart cume. Based on the 20 quarter-hours
during the midday daypart, we know that the
audience turns over every 8.7 quarter-hours or 2.2
hours (the average TSL of the daypart cume). If
the Turnover Ratios had been the same in both
dayparts, 2.9, then the midday audience would
have turned over every 6.9 quarter-hours, or 1.7
hours. Identical Turnover Ratios yield different
average TSL's in different length dayparts. There-

fore, Turnover Ratios can easily be compared across dayparts to measure the station's efficiency in holding the cume during each daypart, without having to further adjust the data for varying daypart lengths.

Time Spent Listening/Turnover Ratios as Listening Behavior

Average Time Spent Listening or Turnover Ratios for very broad dayparts do not really tell us much about how your station's listeners are using the station, only for how long. Recall that time spent listening is a measure of number of occasions of tune-in to the station, and the duration of each tune-in. In broad dayparts, like Monday-Friday 6A-10A, given an Average TSL of 3.3 hours, we can't tell if the average listener was tuning in on a single day for that length of time (one occasion of long duration), or if tune-in occurred across five days for less than 45 minutes per day (multiple occasions of short duration), or something in between. Therefore, if you set a goal of increasing average TSL in the daypart, it's difficult to know what kind of strategy to implement: one that emphasizes tune-in tomorrow, or one that emphasizes staying tuned for one more quarter-hour. While the latter strategy is always laudable, the problem it attempts to resolve (tune-ins of short duration) may not really be the root of a station's short TSL.

However, in smaller dayparts, those composed of 16 or 20 quarter-hours, we can make some deductions about listening behavior. In single day dayparts, like Saturday 6-10A and 10A-3P, we tend to believe that a listener tunes in once during the daypart and stays tuned for a certain length of time. Therefore, time spent listening is created by a single occasion of listening that lasts for a certain length of time (duration). When average TSL in one of these single-day dayparts changes from one survey to the next, we

can infer that the change is attributable to a change in duration and not number of occasions.

Monday-Friday hourly dayparts also allow some deductions about listening behavior, if you are willing to make some assumptions. We tend to believe that a listener tunes in during any given hour at the same time, resulting in a fixed duration. The question is how many of occasions of listening were required to deliver total time spent listening. If time spent listening is created by a fixed duration of multiple occasions, we have an expression of the number of days that the listener tuned in. Turnover Ratios, in Monday-Friday hourly dayparts, can be converted to number of days listening, based on an assumption of constant duration per occasion. Table 8.22 shows the results of number of occasions (days listened), assuming an average constant duration of from one to four quarter-hours during the hour.[*]

From survey to survey, we can infer that changing hourly TSL's (or Turnover Ratio's) are attributable to change in number of occasions (days listened) and not duration.

Remember though, that TSL and Turnover are the result of multiplying two factors. A change in either of the factors (number of occasions or duration per occasion) will impact the average. If average Time Spent Listening changes, it can be either number of occasions, the duration per occasion, or some combination of the two that has changed. For certain dayparts, like the ones on Saturday and Sunday, where occasions are necessarily limited by the single day nature of the

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[*]The number of quarter-hours in the hourly daypart (20) divided by the assumed duration, divided by the Turnover Ratio, results in number of days tuned in. When the number of days tuned is less than one or greater than five, then the assumed average duration is not the correct assumption.

Table 8.22
Number of Occasions of Tune-In
Based on Monday-Friday Hourly Turnover Ratios

Turnover Ratio	Average Number Of Days Tuned Based on a Constant Duration of			
	1 QH	2 QH's	3 QH's	4 QH's
7.0	2.9	1.4	1.0	‹ 1.0
6.0	3.3	1.7	1.1	‹ 1.0
5.0	4.0	2.0	1.3	1.0
4.5	4.4	2.2	1.5	1.1
4.0	5.0	2.5	1.7	1.3
3.5	5.0+	2.9	1.9	1.4
3.0	5.0+	3.3	2.2	1.7
2.5	5.0+	4.0	2.7	2.0
2.0	5.0+	5.0	3.3	2.5
1.0	5.0+	5.0+	5.0+	5.0

daypart, we have a pretty good idea that duration
will drive the average time spent listening. For
dayparts, like Monday-Friday hourly, where dura-
tion per occasion is limited by the one hour per
day length of the daypart, we can assume that
number of occasions (counted by number of days
listened) will drive TSL. However, for other
dayparts, further information is required to deter-
mine the nature of the change.

Remember, too, that TSL and Turnover are both
estimates based on averages. Even if we knew
whether occasions or duration were changing, we
wouldn't know if the change in listening behavior
was attributable to heavy users of the station or
to the light listeners, or both.

In order to understand the dynamics of how your
audience uses your station, you need a closer
examination of their listening behavior than the

standard audience estimates can provide. Two
tools that Arbitron makes available provide this
kind of understanding. Both the Programmer's
Package and the Mechanical Diary, discussed in
the next chapter, can help you analyze changing
behavior patterns.

Average Quarter-Hour Shares

Once we recognize that the average quarter-hour
estimate is actually a reflection of the size of the
cume and the time spent listening by the cume,
the import of the AQH estimate becomes more
evident. When we realize that the best way to
gauge station performance is in light of how
people use radio, since it is more difficult to
show a large audience at times when people in
general are not listening, we can begin to com-
prehend that the best single estimate of a sta-
tion's audience is the station's AQH share.

Share is the division of the station's AQH persons
(therefore reflecting the number of listeners and
how long they listened) by the AQH persons esti-
mate for radio in total in the market (thereby
reflecting the number of radio users and how long
they listened to radio). Share can be computed
for almost any demographic, and for any daypart
included in the local market report.

True shares can only be computed for the Metro
Survey Area (or the ADI, for markets that include
an ADI Report section) because that is the only
geography for which total radio usage is displayed
in the local market report. If you intend to cite
your share estimates outside of your station (for
instance, to program underwriters or to the news-
paper), you can only use share estimates computed
based on a common geography and demographic
(for example, Metro 12+ AQH Persons for Station
divided by Metro 12+ AQH Persons for Radio).
This is a problem for most non-commercial stations
since almost all receive Arbitron data based on

TSA demographics.

Table 8.23
AQH Shares by Daypart for a Sample Station
Metro Persons 12+

	AQH Persons in Hundreds		
	Radio	Station	Share Percent
Mon-Sun 6AM-Mid	5229	72	1.4
Mon-Fri 6A-10A	7857	127	1.6
Mon-Fri 10A-3P	5638	54	1.0
Mon-Fri 3P-7P	5979	99	1.7
Mon-Fri 7P-Mid	3134	28	.9

Internally, however, you can use the Radio Listening Totals reported for the Metro (or ADI) Survey Area, to compute rough station shares based on the station's Total Survey Area AQH estimates. This will provide comparative data, across demos and/or dayparts, that place station use in the context of radio listening, at least as reflected in the Metro (or ADI). A worthwhile application is the calculation of hourly shares. Even though the station estimates are likely to be TSA and the radio usage estimates are Metro, the results of the share computations will let you know when, during the day, the station is doing the best job of attracting radio listeners, and when it is not.'

'Once again, do not cite these shares outside the station, if your AQH estimates are based on TSA data and you have any Non-Metro tune-in. Including your Non-Metro audience in the share calculation overstates your station share, in comparison to the commercial station shares reported in the local market report.

Table 8.24
AQH Shares for Selected Hours for a Sample Station
Station Estimates - TSA Persons 12+
Radio Estimates - Metro Persons 12+
(All Persons Estimates in Hundreds)

| | AQH Persons | | |
Selected Hours	Radio	Station	Share Percent
Mon-Fri 6A-7A	7545	157	2.1
Mon-Fri 9A-10A	6449	76	1.2
Mon-Fri 12N-1P	5595	69	1.2
Mon-Fri 4P-5P	6626	161	2.4
Mon-Fri 7P-8P	3937	71	1.8
Mon-Fri 10P-11P	2899	31	1.1

The sample station is doing relatively better at-tracting radio listeners during the 4P-5P hour than during any other hour on the selective list. The station is doing a better job during the 7P-8P hour than 9A-10A, even though the persons estimate for the morning hour is slightly higher, because of the variance in persons using radio.

Share does not tell us why some dayparts are higher than others, whether from attracting lots of listeners for short periods of time or only some listeners for long periods of time. It only tells us that the station was relatively more suc-cessful during certain times of the day or week. To determine the "how" or "why" of the share, you must go back to the cume and time spent listening estimates on which it is based.

Trending the Audience Estimates
(RRC Data Tables: Daypart and Hourly Trends and
History Sections)

Audience data for a single survey are little more
than a presentation of estimates about audience:
how big, when, how long. This collection of data
may provide enough information to justify a
change in programming implementation, although
we always recommend you wait until you see
something twice before believing it. After making
changes, data from the subsequent survey periods
can be used to evaluate the impact of the pro-
gramming change by comparing new survey results
to old.

The simplest way to measure change in audience
is to divide the new survey results by the old.
This comparison can be performed for each audi-
ence estimate type, for each daypart and each
demographic. In Table 8.25, we compare the
results for different dayparts from one survey to
the next for a sample station.

Table 8.25
Comparison of AQH and Cume Persons Estimates
from Two Surveys for a Sample Station
(All Persons Estimates in Hundreds)

Daypart	AQH Persons			Cume Persons		
	Old	New	Index	Old	New	Index
Mon-Sun 6A-Mid	95	87	92	1780	1858	104
Mon-Fri 6A-10A	148	140	95	765	837	109
Mon-Fri 10A-3P	63	65	104	487	516	106
Mon-Fri 3P-7P	123	133	108	843	762	90
Mon-Fri 7P-Mid	39	38	97	547	531	97

The indices represent the size of the change: the
index less 100 is equal to percent change.   Our
sample station's AQH persons declined 8% (the
index of 92 less 100 equals -8) from one survey
to the next, while cume persons increased 4%
(index of 104 less 100 equals +4), Monday-Sunday
6AM-Midnight.   The difference between the two
percent changes approximates the- change in aver-
age TSL: AQH change of -8 less Cume change of
+4 means an average TSL change of about -12%.

Any change in AQH represents a change in the
Total Quarter-Hours of Listening to the station.
The corresponding change in Cume drives whether
the average time spent listening changes and the
degree of change either positive or negative.

An increase in cume persons should result in an
increase in AQH persons, since each additional
listener is providing at least one new occasion of
listening of one quarter-hour duration.   Sometimes,
though, the AQH estimate does not increase as fast
as the cume increases, because average TSL by
the new cume is less than the station's overall
TSL average.   Other times, either the cume or
the AQH estimate may decline, or even worse,
both may decline.   Reviewing the varied combina-
tions of AQH and Cume changes for our sample
station in each of the Monday-Friday dayparts,
shown in Table 8.25, will illustrate some of the
possible interpretations of the changes:

6A-10A: Cume increase (9%) and an AQH decline
(5%).   This means that average TSL must have
declined.   It suggests a change in the audience:
shorter TSL among established listeners replaced,
only in part, by new cume.   A decline in TSL
by your established listener base (your old
cume) is often a prelude to a decline in cume;
the established listeners are reducing their
reliance on your station for their radio listen-
ing, which can eventually result in their leaving
your station altogether.   The sample station

appears to be countering this by appealing to
new listeners. Future surveys will indicate if
the new listeners are satisfied by the program-
ming, as would be evidenced by a growing aver-
age Time Spent Listening.

10A-3P: Cume increase (6%) and a smaller AQH
increase (4%). This means a decline in average
TSL, but it is not necessarily a problem.   New
listeners (additional cume) will probably listen
for a shorter length of time than established
listeners. Future surveys will indicate if these
new listeners can become established (satisfied)
listeners.

3P-7P: Cume decrease (10%) but an AQH in-
crease (8%). This means that average TSL must
have increased. The suggested change in listen-
ing behavior is a large increase in time spent
listening by the established users, accompanied
by the loss of lighter listeners. When the cume
declines, it's almost always the lightest listeners
who are lost. Heavy listeners to a station will
rarely stop listening all of a sudden. First,
they will become lighter listeners before leaving
the cume completely (see 6A-10A). It may have
been last survey's new (and lighter listening)
listeners who dropped out of the cume this
survey.

7P-12Mid: Cume decrease (3%) with an AQH
decrease at the same rate (3%). This means
that average TSL must have remained the same.
The fact that both estimates changed at an
equal rate means, foremost, that there was a
change in the size of the Cume. Because the
change was a decline in cume for our sample
station, the suggested change in the audience
composition is that the lightest listeners have
left the cume, AND that the time spent listening
by one or more remaining listener segments has
slipped slightly. This results in an average
time spent listening equal to that for the pre-
vious Cume.

Every station must deal with some combination of AQH and Cume changes from survey to survey. We feel that understanding the concepts behind those changes and what they are telling you about the changing behavior patterns of your listeners, and the changing composition of your audience, is so important that we'd like you to try interpreting the following conditions. Each of the quiz questions is a possible combination of AQH and Cume changes not included in Table 8.25 for our sample station. For each combination, describe what has happened to average TSL, and which listener segments (ie., heaviest or lightest) of the cume have changed and how.

A Quiz

Interpret the following combinations of Cume and AQH changes that may occur from one survey to the next.

1. Cume increase of 8% and an AQH increase of 8%.

2. Cume increase of 8% and an AQH increase of 12%.

3. Cume increase of 10% and no change in AQH.

4. No change in cume and an AQH increase of 10%.

5. No change in cume and an AQH decline of 10%.

6. No change in cume and no change in AQH.

7. Cume decline of 12% with an AQH decline of 8%.

8. Cume decline of 8% with an AQH decline of 12%.

9. Cume decline of 8% and no change in AQH.

For our interpretations, please see the Appendix.

A growing (or declining) Persons estimate is not always a measure of growth (or loss). If the population of the survey area has grown, then a station's Persons estimates should grow at an equal rate just to keep pace. Therefore, indices of Persons change should always be compared to an index of population change to determine if growth is station-generated or changed by a circumstance outside of the station's control, like the Market's population. For our sample station, if the population estimate for the survey area had increased 4% from survey to survey, that change would match the cume persons change. Our conclusion would be that the sample station had actually not registered any real growth, because the Cume and the Population base increased at the same rate. However, the interpretation of the behavioral changes evidenced by the combination of the Cume and AQH changes, before adjusting for population size changes, remains the same.

Radio use can change from survey to survey too. When comparing estimates across surveys to determine the effectiveness of your station's performance, it is always best to use those estimates that take into account any changes in radio use between the two surveys. If, each survey, you convert your station's audience estimates to measurements within the context of radio use (eg., indices of demographic appeal relative to the demographic appeal of radio by daypart; cume contribution percents relative to the percent of the radio cume that utilizes each daypart; Average TSL expressed as a percent of Radio TSL by daypart), those measurements are what should be tracked over time to really identify changes in the station's performance.

Radio use may change from season to season but the change may be more subtle than that measured at the Market Total Listening level. During different times of the year, it is likely that listening behavior changes. During summer months, for example, Hit stations are likely to flourish because the young population has more time available to

listen when school is not in session. This type of
change is measurable at the Market Total, by
demographic, level. But during these same summer
months, listening to news stations during the
drive-time dayparts may decrease. The news
listeners may very well still be listening, but to
something else. What they listen to while in the
car on the way to work may not match what they
listen to while on a vacation from work. This
more subtle type of change in listening behavior
may not be reflected in the Market Total Listening
estimates. To ensure that you are accounting for
these more subtle types of listening changes, it is
best that you trend your audience estimates across
like surveys. For example, compare Fall to Fall or
Spring to Spring.

So many times, when there is an audience decline,
a station will say that it can't figure out why
because the station has remained the same. First
of all, it is rare that absolutely nothing about a
station has changed, let alone accounting for
marketplace changes that can affect your listeners.
Something as small as a different attitude by a
program host, or a change in TSL to other stations
with whom you share audience, will be reflected
in your listening estimates. If OTHER stations
have effectively implemented good programming
strategies, and your station has not changed a
thing, your audience estimates will probably de-
cline. (The converse can also happen; poor pro-
gramming implementation on other stations can
help to boost your audience. But few people ever
question the increases.)

Audience data for a survey are based on a sample
and, as such, are subject to sampling error.[19]
They are an "estimate" of listening, not facts or
"truth". Data from only one or two surveys pro-
vide an indication at best, and will generally not
be enough information for sound decision-making

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[19]A discussion of Sample Error is included in
the Appendix.

purposes. It takes a minimum of three points in time to create a trend line. Even then, if the trend is inconsistent, more points in time will be required to establish the direction of change.

For example, assume a station shows the following Metro Cume Ratings across three survey periods, all of which are from the fall survey period (using the rating adjusts for population differences, and using the same survey period across years adjusts for seasonal variations):

Two Years Ago	One Year Ago	Most Recent Survey
Year 1	Year 2	Year 3
4.2	5.7	4.9

Compared to a year ago, the station has declined dramatically. But Year 2 was such a large increase over the first year, maybe that rating was due to a sample distortion. It's really difficult to tell if the station is declining or not. It may be helpful to average the estimates across the three years, and then compare the current year estimate to the average. In the example above, the Year 3 estimate is equal to the average of the estimates for all three years. We should, therefore, conclude that the station is more likely maintaining its cume, rather than growing or declining.

Trending trends is another useful way to measure change even though we may not have all the survey points across years that we would like. Assume your station has estimates for two Spring survey periods, and has just received estimates for a second Summer survey period. The cume persons estimates for the Monday-Friday morning daypart, on a constant population base, are as follows:

-----Spring-----		-----Summer-----	
Year 1	Year 2	Year 1	Year 2
765	626	837	735

The second Spring survey indicates that the morn-
ing cume is down, but this decline may be a
result of sampling error in either Year 1 or Year
2.   You simply don't have enough information to
be sure; what you have is an indication of a
problem.   When the new Summer results arrive,
you note that the morning cume declined when
compared to Summer of a year ago.   The indication
of a cume loss in the morning, first suggested in
the Spring survey, has been confirmed by the
results of the Summer survey, which also show a
decline in morning cume.   Measuring multiple
points in time across a year can be just as useful
as measuring the same point in time across many
years, particularly when the two trend lines can
be used in combination.

*Where to Start in Analyzing Your Station's Esti-
mates*

The RRC, when it first receives audience estimates
for an individual station, examines the current
survey data in light of the top-line history of the
station, looking for the overall direction of the
station's audience changes.   At first, we're only
looking at the trends of the size of the cume,
and some indicators of when the cume listened
such as weekpart contribution and flow, and Mon-
day-Friday daypart contribution.

Of concern, too, is the average Time Spent Listen-
ing by the cume, and, more importantly, the Aver-
age Quarter-Hour Persons change especially in
relation to the way that the Cume Persons esti-
mate changed.   Our next step is to examine the
data by daypart, noting the AQH and Cume Persons
changes compared to a year ago (the same Quar-
terly survey from the preceding year).   When
possible, we look for confirmation of the ups and
downs shown in the previous survey results.

Depending upon the types of audience changes
that occurred, we may examine the data in more

detail, looking at, for example, change by demo-
graphic, checking to see if the estimates for one
demo are distorting the results of the 12+ Totals.
Our primary goal, though, is to note the broad
trends of the audience changes.

Every station, at any point in time throughout
the year, should have some goal that it is at-
tempting to accomplish. Of course, there is the
mission statement that sets the overall objectives.
But, in attempting to achieve mission, a station
should be setting some short-term goals, the
accomplishment of which can be measured: in-
crease size of cume; increase time spent listening
by the cume by extending the duration of each
occasion of listening; increase time spent listening
by increasing the number of occasions of listening;
increase the use of the station Saturday 10A-3P
by those who already listen Monday-Friday 6A-
10A. In order to accomplish these short-term
goals, the station must have established an imple-
mentation strategy. Therefore, when you first
receive your audience estimates, you will want to
determine if your current strategy is working.
Where exactly you look in the data is dependent
upon the strategy that has been implemented.
Remember, though, that the audience data are only
estimates, and it may take several surveys before
you have conclusive evidence of the success (or
failure) of a given strategy. Obviously, strategies
that do not work should be changed for future
measurements. (Even in failure, though, you have
learned something, even if it is only what not to
do.)

Just as important, though, is examining the data
with a jaundiced eye, looking for bad news.
Probe all of the station "ups" to see if they are
accompanied by any negatives (for example, a small
cume increase along with an AQH decline, or
increased flow from Weekday to Weekend but a
smaller Weekend cume). Identify all of the
"downs". Determine if these changes, particularly
if they are negative relative to radio listening in
the market, are indications of a new problem or

confirmation of problems that have been indicated
in previous survey results.   Armed with this infor-
mation, you can establish the next set of goals to
be accomplished, and begin developing strategies,
and then executing them -- waiting for the next
sets of survey results to determine success or
failure.

Chapter Nine

The Listening Behavior of Your Audience   ___ _ ___

Two tools are available from Arbitron to help you analyze the listening patterns evidenced by your cume.   These are the Programmer's Package and the Mechanical Diary.   While the latter can be requested by any subscribing station for any area, including a Primary Signal Area, the Programmer's Package is only available to stations subscribing to Arbitron-measured markets.   Both present raw diary data; they do not contain audience projections.   The Programmer's Package includes much of the data analyses that could normally be performed by tabulation of the Mechanical Diary (if one had the time and patience).   However, the Mechanical Diary contains additional listening behavior information that is unavailable in any other form.

We'll examine the tabulations that are contained in the Programmer's Package first and then look at the data that is only available in the Mechanical Diary.

The Programmer's Package

An AID report option available to stations in Arbitron-measured markets is the Programmer's Package.   It is a compendium of information about the listening behavior, both to radio and to the station, of the subscribing station's audience.   All

of the data presented are based on raw diary information.   The diary weights used to project audience estimates have not been applied in the Programmer's Package calculations.   The report is intended for use by stations with large diary counts (in the hundreds), but good detail about listening behavior can be garnered by any station that has forty diaries or so.   In order to maximize the diary count included in the report, the RRC almost always processes the report based on Persons 12+[1] in one of the allowable geographies: Metro or TSA or ADI, if available for the market.

The order of the Tables that are included in the Programmer's Package is practically unfathomable. Instead of reviewing them in Table Number order, we will look at them in terms of the type of information that they present.

Programmer's Package Table 7:   Station Time Spent Listening

This Table presents the average time spent listening, in quarter-hours, to your station by the diarykeepers that recorded listening to your station.   The base for the TSL computation is the cume (unweighted) and the average TSL by that cume, reported for Monday-Sunday, Monday-Friday and Weekend 6A-Midnight plus the four major Monday-Friday dayparts and Monday-Friday 6A-7P.

This Programmer's Package Table is only important because it displays the average TSL results based on diaries before they were weighted to project audience estimates.   This is important because many of the other Tables, included in the Pro-

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[1]Other demographic choices are available. They currently include: Men 18+, Women 18+, Adults 18+, Persons 12-34, Adults 18-49, Adults 25-54, Adults 25+, and Adults 35+.

grammer's Package describe how that TSL was achieved.

Programmer's Package Table 2: Frequency Distribution and Quintiles of Radio Listening

This Table, a sample of which appears in Figure 9.1, shows time spent listening to Radio by those people who reported listening to your station. The top portion is a frequency distribution, in graphic form, of the quarter-hours of listening to all of radio, Monday-Sunday 24 hours, by your cume.

The quarter-hours of listening are divided into groupings of variable length (5, 10, 20, 50, 100 quarter-hours) increasing in size towards the top end of the scale. Each "X" displayed next to each quarter-hour group is equivalent to 1% of the station diary count. In Figure 9.1, four percent of the station's diarykeepers reported listening to radio between 21 and 25 quarter-hours during the survey week (Monday-Sunday 24 Hours), while five percent listened to radio between 141 and 160 quarter-hours. The actual diary count and percent of diary count for each quarter-hour grouping are displayed.

If you turn the frequency distribution on its left hand side, you can see a curve of radio use behavior. Generally, the curve will be an inverse U-shape, or a bell shape, with the peak of the curve, or the majority of the "X" marks, clustered around the 71 to 80 quarter-hour listening group. This is because the typical (ie., median) listener listens to radio about 77 quarter-hours per week.[2]

The distribution of your listeners by their time

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[2]You will recall, from our discussion in Chapter 3 of how people use radio, the normal distribution of time spent listening to Radio.

Figure 9.1
Programmer's Package Table 2 Frequency Distribution
TSL to Radio by a Sample Station's Listeners
Monday-Sunday 24 Hours

QUARTER HOUR GROUPS	1	5	10	15	20	25	30	35	40	%	N
1-5	.									0	0
6-10	XX									2	4
11-15	X									1	3
16-20	XXX									3	6
21-25	XXXX									4	9
26-30	XX									2	4
31-40	XXXXXXX									7	15
41-50	XXXXXXXXXXXX									12	26
51-60	XXXXXXXXXX									10	22
61-70	XXXXX									5	10
71-80	XXXXXXX									7	16
81-90	XXXXXXXX									8	17
91-100	XXXXX									5	12
101-120	XXXXXXXX									8	18
121-140	XXXXX									5	11
141-160	XXXXX									5	10
161-180	XXXX									4	9
181-200	XXXX									4	8
201-250	XXXXX									5	10
251-300	XXX									3	7
301-400	X									1	3
401+	.									0	0
										100	220

X = 1% OF TOTAL CUME

spent listening to radio is redisplayed in the
bottom portion of the Table. Those diarykeepers
reporting listening to your station are divided
into five equal segments called quintiles. The
segmentation is based on number of quarter-hours

of reported listening to Radio with the first quin-
tile including the heaviest users and the fifth
quintile the lightest radio users.   The quarter-
hours of listening break points for each quintile
are shown, along with the average TSL to radio
for the quintile.

If the quintile's percent distribution of time spent
listening to radio is different from the national
norm, then you have an indication that your audi-
ence is atypical in their radio use.   They may
listen to radio longer or less than the norm.
Based on an RRC tabulation of Spring 1985 Pro-
grammer's Packages for fifty public radio sta-
tions[3],   your radio users are likely to be slightly
heavier radio users than the norm.   Note, though,
that the actual distribution of quarter-hours of
listening by quintile, displayed in Table 9.1, almost
exactly matches the expected distribution.[4]

Also reported for each quintile in Programmer's
Package Table 2 is the average TSL to your sta-
tion by each radio use quintile.   This is shown
both as number of quarter-hours of listening to
your station as well as a percent of time spent
listening to radio.   The percent is an expression
of loyalty to your station, a share percent of
radio listening.   If the different radio listening
quintiles are equally loyal to your station (ie, the
percent of radio TSL is identical for all quintiles),
then the TSL to your station by the radio usage
quintiles will decrease as radio use decreases; the

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[3]Only those stations that operated full-time
(6A-Midnight) were included in the tabulation of
Spring 1985 Programmer's Package data.   That is,
those AM stations restricted to daytime hours
were excluded to reduce the amount of deviation
among stations due to different broadcast sched-
ules.

[4]To compute the actual distribution, sum the
Quintile TSL's to Radio in QH's, and percent each
Quintile TSL against that sum.

Table 9.1
RRC Norms: Quintile Distribution of TSL to Radio (in QH's)
Monday-Sunday 24 Hours

	Mean Station		Median Station	
	TSL in QH's to Radio	QH Contribution Percent	TSL in QH's to Radio	QH Contribution Percent
1st Quintile	213	43%	210	43%
2nd Quintile	123	25%	122	25%
3rd Quintile	81	16%	80	16%
4th Quintile	52	11%	51	10%
5th Quintile	25	5%	25	5%
Average	99		98	

Based on Spring 1985 Data for 50 Public Radio Stations

average length of listening to your station is dependent upon the listener's length of listening to radio. The norm for public radio, displayed in Table 9.2, shows that loyalty (share) increases as length of listening to radio decreases.

The average TSL to your station segmented by the radio use quintiles would ideally include two heavy listening groups, two medium groups, and one light listening group. The RRC defines a heavy listening group as one where average TSL to the station exceeds 40 quarter-hours; a medium usage group approximates 30 quarter-hours of station use per week; while a light listening group uses a station 20 or fewer quarter-hours per week. Note that public radio stations, in general, as shown in Table 9.2, do not match the ideal of two heavy, two moderate and one light group. Instead, the typical public radio station shows light listening in both quintiles 4 and 5, and

really only heavy listening in the top quintile.

Table 9.2
RRC Norms: TSL to Station (in QH's) Segmented by
TSL to Radio Quintiles
Monday-Sunday 24 Hours

| | Mean Station | | Median Station | |
	TSL	Loyalty	TSL	Loyalty
1st Quintile	62	30%	58	28%
2nd Quintile	40	33%	40	34%
3rd Quintile	28	36%	28	38%
4th Quintile	19	37%	19	35%
5th Quintile	11	46%	11	46%

Based on Spring 1985 Data for 50 Public Radio Stations

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*Programmer's Package Table 2A: Frequency Dis-
tribution and Quintiles of Listening to Your Station*

This Table is very similar in look to Programmer's
Package Table 2, but the orientation of the table
is different. Instead of concentrating on seg-
mentation of listeners by their time spent listening
to radio, the emphasis is on the time spent listen-
ing to your station.

Because the frequency distribution of quarter-
hours of listening is based on TSL to your station,
it will tend to be top-heavy. The frequency
distribution will highlight extremely heavy users
of the station, those that listen to the station

200 quarter-hours or more (50+ hours) a week.[*]

A given in marketing research, when describing consumer usage of a product or service is that only a small percent of the consumers will account for the bulk of consumption. The use of your radio station is no different. The average TSL reported in Programmer's Package Table 7 obscures the way that listeners use the station; there may be no listener who actually listened in the amounts shown by the average. Most of the listeners will be light users of your station; that's why the frequency distribution of quarter-hours of listening to your station is top-heavy. A small percentage of the listeners will contribute most of the quarter-hours of listening. The norm is that 20% of your cume will contribute 60% of the gross quarter-hours of listening to your station. The lightest users of the station, 40% of the cume, will contribute less than 10% of the gross quarter-hours of listening. The average TSL by the cume will be larger than the time spent listening by the typical (ie., median) listener, because the average has been inflated by the heaviest 20% of the cume. The principle is illustrated in the quintiles of listening, segmented by number of quarter-hours of listening to your station, reported at the bottom of Programmer's Package Table 2A.

Norms for the division of listeners into five equal groups based on their time spent listening to the station, for public radio stations, are illustrated in Table 9.3.

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[*] Inclusion of these very heavy listeners in your sample for the survey, has an unfortunate inflationary effect on your average TSL and therefore AQH persons estimate. The effect is unfortunate because these exceptional listeners are too atypical; it may be many survey samples before you receive a diary from such a listener again. Keeping in mind that TSL and AQH are both estimates based on averages, such atypical listening acts to distort the average.

Table 9.3
RRC Norms: TSL to Station (in QH's) Segmented by
TSL to Station Quintiles
Monday-Sunday 24 Hours

| | Mean Station | | Median Station | |
	TSL	Loyalty	TSL	Loyalty
1st Quintile	95	64%	94	64%
2nd Quintile	35	35%	33	35%
3rd Quintile	18	23%	17	21%
4th Quintile	9	12%	9	11%
5th Quintile	4	5%	3	4%
Average	32	32%	31	32%

Based on Spring 1985 Data for 50 Public Radio Stations

Critical information on Table 2A includes the
loyalty percents: average TSL to the station
expressed as a percent of average TSL to radio
for each quintile. These are another expression
of user satisfaction with the station. Think of
these loyalty factors as your share of your listen-
ers. The loyalty percents should decline as TSL
to the station declines; your heaviest listeners
should exhibit the highest share of listening, the
greatest loyalty. In general, the first quintile,
the heaviest users of the station, should show a
loyalty greater than 65% of radio use. The public
radio norm illustrated in Table 9.3 is 64%. To put
this loyalty factor in perspective, remember that
among your heaviest listeners, a loyalty factor of
65% means that more than one-third of their radio
listening is spent with some other station(s). We
expect the loyalty factor to decline by about 50%
as TSL to the station declines. Therefore a top
quintile loyalty of 65% is often followed by a
second quintile loyalty of only 33% or slightly

better.

Because each quintile represents an equal number
of listeners, 20% of the diarykeepers that recorded
listening to your station, it is a simple matter to
compute the contribution of each group'listening
to the gross quarter-hours of listening to the
station.   Simply sum the quarter-hour counts
reported for each quintile, and then percent each
quintile quarter-hour count against the sum.
Using our public radio norm, the percent of quar-
ter-hours of listening reported by each listening
segment is displayed in Table 9.4.   Note how
closely both the average and typical public radio
station match the expected distribution for any
station, discussed in Chapter 8.

Table 9.4
RRC Norms: Quintile Distribution of TSL to Station
(in QH's)

| | Quarter-Hour Contribution Percent | |
	Mean Station	Median Station
1st Quintile	59%	60%
2nd Quintile	22%	21%
3rd Quintile	11%	11%
4th Quintile	5%	6%
5th Quintile	2%	2%

Based on Spring 1985 Data for 50 Public Radio Stations

The higher the contribution percent in the first
quintile, the more reliant you are on a small
segment of your cume (20%) to provide a high
average time spent listening.   If we view average
TSL as the measure of listener satisfaction with
programming,   then an average TSL that is too
dependent upon 20% of the cume (ie., a first

quintile quarter-hour contribution of greater than 60%), is a measure of large dissatisfaction by the bulk (remaining 80%) of the cume. Dissatisfied cume has a tendency to become non-existent cume over time, unless programming strategies are put in place to reverse the cause of the dissatisfaction.[*]

The data from Table 2A should be trended over time. Tracking of the average TSL by quintile, of the contribution of each quintile to the quarter-hour total, and of the loyalty percents for each quintile provides an on-going story of the dynamics of time spent listening by your cume. Increases or decreases in average TSL to the station can be traced to changes in listening behavior by segments of the audience, from heaviest to lightest users to determine if the TSL change is a function of change in radio use by your listeners or their loyalty to your station.

Remember that Time Spent Listening by the cume (no matter if it's heavy or light listening cume) is a function of two factors: Number of Occasions and Average Duration per Occasion. A change in either one or the other will impact TSL.

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[*]Note that the Programmer's Package Table 2A (and Table 2) display reports listening Monday-Sunday 24 Hours. If your station is on the air between Midnight and 6AM, then the Quintile TSL's cannot be directly compared to those TSL's by quintile computed based on the expected distribution of the quarter-hours, that we discussed in Chapter 8 (when we used Monday-Sunday 6A-Midnight as our broadest daypart) unless you compute the expected distribution using your Monday-Sunday 24 Hour TSL. Even then, there may be distribution variances due to the application of diary weighting. It is best to compare the actual per-cent distribution from Table 2A with the expected percent distribution noted in Chapter 8.

*Programmer's Package Table 6:   Listening Behavior
Patterns by Daypart*

The first thing to note about Programmer's Package Table 6 is that those listeners who only listen to your station on the Weekend are excluded. Your Monday-Friday listeners, then, are divided into four groups: those who listen only one daypart, two, three or four dayparts.   Each of the four groups is divided into the dayparts in which listening was reported: 6-10A, 10A-3P, 3-7P and 7P-Midnight.   Totals by daypart within listening group are then displayed.

The percents printed on the report page (see Figure 9.2) are, at first glance, a little confusing. But each percent is an expression of the daypart count for the listening group divided by the number of diaries in which listening was recorded for the daypart.   For example, from Figure 9.2, you will note that of the 175 station diaries reporting listening Monday-Friday, 100 recorded listening to the station sometime Monday-Friday 6A-10A. Twelve of these morning diaries only recorded listening to the station in the morning daypart. That accounts for 12.0% of the Monday-Friday 6A-10A diaries and 6.9% of the Monday-Friday 6A-Midnight diaries.   Examination of the percents can aid in determining whether listeners to a particular daypart are more likely to be exclusive to that daypart or use multiple dayparts.   From the example, it is apparent that the 3P-7P listeners are most likely to be exclusive; 24% of them only listen during that daypart.   The 6-10A listeners are the least likely to be exclusive; only 12% are. Even though the number of 10A-3P exclusive listeners is smaller than the number of 6-10 exclusives, on a percentage basis, the midday listeners are more likely to be exclusive, by a small amount.

The Monday-Friday listeners for the typical public radio station, based on our Spring 1985 50-station sample, are divided into the four groups as follows: 36% report listening in only one daypart;

Figure 9.2
Programmer's Package Table 6 for a Sample Station
Listening Behavior Patterns by Daypart

MON- FRI 6AM-10AM	MON- FRI 10AM-3PM	MON- FRI 3PM- 7PM	MON- FRI 7PM- MID	TOTAL	LISTENING GROUP TOTAL
LISTENING IN ONLY ONE DAYPART . . .					64 (36.6)
12 (12.0)				12 (6.9)	
	10 (12.5)			10 (5.7)	
		29 (24.2)		29 (16.6)	
			13 (18.1)	13 (7.4)	
LISTENING IN ONLY TWO DAYPARTS . . .					50 (28.6)
10 (10.0)	10 (12.5)			10 (5.7)	
18 (18.0)		18 (15.0)		18 (10.3)	
4 (4.0)			4 (5.6)	4 (2.3)	
	6 (7.5)	6 (5.0)		6 (3.4)	
		7 (5.8)	7 (9.7)	7 (4.0)	
	5 (6.3)		5 (6.9)	5 (2.9)	
LISTENING IN ONLY THREE DAYPARTS . . .					36 (20.6)
18 (18.0)	18 (22.5)	18 (15.0)		18 (10.3)	
1 (1.0)	1 (1.2)		1 (1.4)	1 (0.6)	
12 (12.0)		12 (10.0)	12 (16.7)	12 (6.9)	
	5 (6.3)	5 (4.2)	5 (6.9)	5 (2.9)	
LISTENING IN ALL FOUR DAYPARTS . . .					25 (14.3)
25 (25.0)	25 (31.3)	25 (20.8)	25 (34.7)	25 (14.3)	
TOTAL VERTICAL LISTENING BY DAYPART				† LISTENING TOTALS	
				†	
100	80	120	72 †	175	175

30% in two dayparts; 22% in three dayparts; and,
12% in four dayparts. One out of three Monday-
Friday listeners never cross a daypart boundary;
two of three never cross more than one daypart

boundary.   Our sample station's data, shown in
Figure 9.2, approximates the patterns shown for
the public radio norm.

To determine the average number of dayparts
utilized by the Monday-Friday listeners, based on
unweighted diaries, in our example, we can take
the percents for each listening group, multiply the
percents by the number of dayparts, sum the
results and divide by 100 since 100% was the base
of our computation.

```
  One Daypart Listeners = 36.6% x 1 Daypart  =  36.6
  Two Daypart Listeners = 28.6% x 2 Dayparts =  57.2
Three Daypart Listeners = 20.6% x 3 Dayparts =  61.8
 Four Daypart Listeners = 14.3% x 4 Dayparts =  57.2
                                        Sum = 212.8
                            Divided by 100 =    2.1
```

The average Monday-Friday listener, for our sam-
ple station, tunes in for at least two Monday-
Friday dayparts.   The typical listener, on the
other hand, tunes in for less than two dayparts.
The typical listener break can be found by deter-
mining in which of the daypart groupings the
midpoint, or the 50% of listeners mark, is
achieved.   Because the sum of the one and two
daypart listeners exceeds 50% of the Monday-
Friday total (actually 65.2%), while the one daypart
grouping accounts for less than 50% of the Mon-
day-Friday total, we know that the typical listener
falls within the range of one to two dayparts used.

Changes in Time Spent Listening from one survey
to the next can be caused by changes in number
of Monday-Friday dayparts utilized.   While there
is no perfect way from this table to determine if
a TSL decline, for example, was due more to a
decline in Number of Occasions, or in Duration
per Occasion, we can draw some inferences by
examining the percent of diaries that recorded
listening in non-contiguous dayparts.   For example,
we can examine the 6-10A listeners in Figure 9.2

and determine the percent that were not exclusive and did not listen 10A-3P, the contiguous daypart.

For our sample station, we note that 18% of the morning diaries reported listening 3-7P, 4% listened 7P-Midnight, and 12% listened both 3-7P and 7P-Midnight.   The sum of those percents, 34% of the 6-10A listeners reported listening in a non-contiguous daypart.   We can infer that the listening to the other daypart was caused by a new occasion of listening and not an extended duration.   If the 34% recorded this survey is less than the percent recorded in previous surveys, then we can judge that number of tune-ins (occasions) has declined and therefore TSL has declined.

If a programming strategy has been implemented in an attempt to increase flow from 6-10A to 10A-3P or any other Monday-Friday daypart combination, this table can be used to verify the performance of that strategy, as can the next Programmer's Package Table that we'll review.

Programmer's Package Table 3A: Audience Recycling by Daypart
(not to be confused with Table 3 that has the same title)

Programmer's Package Table 3A shows for each Monday-Friday daypart, the percent of the audience (represented by number of diaries) that also listened to another Monday-Friday, Saturday or Sunday daypart and which ones.   Like Programmer's Package Table 6, the Table is based on Monday-Friday listeners.   Weekend only listeners are excluded.

Looking at our sample station in Figure 9.3, we note that 54% of the Monday-Friday 6-10A listeners also listen Monday-Friday 10A-3P.   This percent is a summary percent of the data displayed on Table 6.   Going back to Figure 9.2, we noted that 10% of the morning cume also listened 10A-3P and

Figure 9.3
Programmer's Package Table 3A for a Sample Station
Audience Recycling by Daypart

	M-F 6AM-10AM (%)	M-F 10AM-3PM (%)	M-F 3PM-7PM (%)	M-F 7PM-MID (%)	M-F 6AM-MID (%)
MON-FRI					
6AM-10AM	100	68	61	58	57
10AM- 3PM	54	100	45	50	46
3PM- 7PM	73	68	100	68	69
7PM- MID	42	45	41	100	41
6AM- MID	--	--	--	--	100
SATURDAY					
6AM-10AM	26	30	20	24	18
10AM- 3PM	31	38	26	29	23
3PM- 7PM	50	49	44	44	38
7PM- MID	19	20	19	24	16
SUNDAY					
6AM-10AM	22	25	18	22	16
10AM- 3PM	32	38	27	28	23
3PM- 7PM	19	21	18	18	14
7PM- MID	11	13	11	18	9
WEEKEND					
6AM- MID	72	75	61	71	59
N =	100	80	120	72	175

no other Monday-Friday daypart; 18% listened to
10A-3P and 3-7P, in addition to 6-10A; 1% also
listened 10A-3P and 7P-Midnight; while 25% lis-
tened to all dayparts. Summing the percents-of
those who listened to 6-10A and 10A-3P from
Programmer's Package Table 6 yields the 54% re-
ported on Programmer's Package Table 3A. The

Monday-Friday daypart flow portion of Table 3A
is a summary of the information included on Table
6.

The new data displayed on Programmer's Package
Table 3A portrays recycling of the Monday-Friday
daypart audience to the Weekend. Looking at the
bottom of the display, we note that 72% of the
Monday-Friday 6A-10A listeners also listen on the
weekend, sometime Saturday and/or Sunday 6A-
Midnight. Examination of the data for each of
the listed weekend dayparts lets us know to which
dayparts the audience is flowing, and to which it
is not listening. In general, a station should be
able to move (ie., promote flow of) its prime time
audience from one prime time daypart to another,
including Saturday 6-10A and 10A-3P and Sunday
10A-3P. Unfortunately, the Monday-Friday prime
time audience for our sample station is most
likely to flow to Saturday 3-7P when they listen
on the Weekend. Heavy flow to this Saturday
daypart is fine; but, it lacks the potential of flow
to the more critical Weekend dayparts. A pro-
gramming strategy that promotes flow to Saturday
6-10A, 10A-3P and Sunday 10A-3P (in that order
of importance) is best.

An increase or decrease in flow from any Monday-
Friday daypart to the weekend means a change in
TSL. Because the tuning involves a different day
of the week, we know that the change in TSL is
a function of a change in Number of Occasions.

Note that the last column in Figure 9.3 is labeled
Monday-Friday 6AM-Midnight. The "recycling"
percents for the four Monday-Friday dayparts in
that column are actually contribution percents.
That is, using the sample, 57% of the Monday-
Friday cume listens during the 6-10A daypart.
This data is readily available using audience pro-
jections (diaries after weighting) and is, therefore,
best utilized that way. The unweighted contribu-
tion to Monday-Friday 6A-Midnight percents do
not provide any new insights into the listening
behavior of your audience.

Programmer's Package Table 3:   Audience Recycling by Daypart

Similar to Table 3A in format, the dayparts for which "recycling" percents are displayed are Monday-Friday 6A-Midnight (same data as on Table 3A), Weekend 6A-Midnight, and Monday-Sunday 6A-Midnight.   All of the data for Monday-Sunday are actually daypart contribution percents; and, it is best to use your cume audience estimates to decipher daypart contribution rather than these raw diary counts.

The new information provided on Table 3 is the Weekend column.   The "flow" percents in the weekend column to the Saturday and Sunday dayparts are, once again, best ignored on this Table.   But, the percent of the Weekend audience that listens to each of the Monday-Friday dayparts is unavailable in the standard audience data.   If yours is a station with a large weekend audience, it may be helpful to know, to which of the Monday-Friday dayparts (with most concern for the prime time dayparts) the audience is least likely to flow, in order to determine if a promotional strategy is called for.

Figure 9.4
Partial Programmer's Package Table 3 for a Sample Station
Audience Recycling from Weekend to Monday-Friday Dayparts

	WEEKEND 6AM-MID (%)
MON-FRI	
6AM-10AM	48
10AM- 3PM	40
3PM- 7PM	49
7PM- MID	34

Our sample station results, shown in Figure 9.4, indicate that the Weekend audience flow to Monday-Friday 10A-3P is low, relative to the 6-10A and 3-7P dayparts, at only 40%; 60% of the Weekend cume does not report use of the station during the Monday-Friday 10A-3P daypart.

If the station wants to increase use of the Monday-Friday 10A-3P daypart by Weekend users, they may have a problem building an effective strategy. This Table does not supply which of the weekend time periods are least likely to provide audience to the Monday-Friday midday daypart, and are therefore prime candidates for promotional announcements of the weekday midday programming.

We need to return to the percents on Programmer's Package Table 3A (Figure 9.3), highlighting those that represent flow from Monday-Friday midday to the weekend dayparts. We also need to know, from our audience estimates, the number of Cume Persons listening in the Monday-Friday 10A-3P daypart, as well as each of the Weekend dayparts. Let's assume that the sample station has an estimated 18,000 Monday-Friday midday listeners, and 10,000 Saturday 10A-3P listeners. By multiplying the percent of the Monday-Friday midday cume that also listened during a weekend daypart by the Monday-Friday 10A-3P cume, we can determine the estimated number of listeners that flowed to the Weekend daypart. Since Table 3A indicates that 38% of the Monday-Friday 10A-3P cume also listens Saturday 10A-3P, we will convert that to a persons estimate.

M-F 10-3		Flow Percent		Estimated Cume
Cume	*	to Sat 10-3	=	Using Both Dayparts
18,000	*	.38	=	6,800

Since the cume for Saturday 10A-3P is 10,000 listeners and 6,800 of them also listened Monday-Friday 10-3, we can estimate that 10,000 less 6,800 (3,200) Saturday midday listeners (or 32%) did not listen Monday-Friday midday. By perform-

ing this set of calculations for each of the week-
end dayparts, we can estimate which weekend
dayparts offer the best opportunity for promoting
to weekday midday.[7]

*Programmer's Package Table 4:   Frequency of
Listening Day*

This table displays the percent of diarykeepers
who reported listening to your station by number
of days listened, whether one, two, three, or up
to seven days.   The percents of number of days
listened are reported for Total Week (Monday-
Sunday 6A-Midnight), Weekend and major Monday-
Friday time periods.

Looking at the Table 4 display for our sample
station (Figure 9.5), we note that 31% of the Total
Week listeners use the station one day per week,
while 14% listen to the station seven days per
week.   High percents for one and two day listeners
indicate a problem in building TSL by Number of
Occasions.   The problem may be due to a high
Weekend Only cume.   Compare the percents re-
ported for Monday-Friday 6A-Midnight and Total
Week, to check the influence of the Weekend
Only Cume.   Since, for our sample station, the
Total Week cume is twice as likely to listen one
day only as the Monday-Friday 6AM-Midnight
listeners, we can see the impact of those listeners

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[7]Because we are applying percents based on
unweighted diary counts to audience estimates
based on weighted diaries, to derive a persons
estimate, this is a less than perfect calculation.
However, it is the only way to determine, given
the data available, the information required for
decision-making.   As long as the decision-makers
understand the implications of the assumption
(that the audience projections based on weighted
or unweighted diaries would yield the same re-
sults), it's okay to derive the required estimates.

Figure 9.5
Programmer's Package Table 4 for a Sample Station
Frequency of Listening Day

		NUMBER OF DAYS LISTENING							
		1	2	3	4	5	6	7	N
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	
MONDAY-FRIDAY									
6AM- MID	100	15	21	6	9	17	15	18	175
6AM-10AM	100	4	10	3	8	24	22	29	100
10AM- 3PM	100	5	20	8	6	13	20	29	80
3PM- 7PM	100	14	8	7	9	22	20	20	120
7PM- MID	100	8	14	7	10	18	19	24	72
6AM- 7PM	100	14	18	6	9	18	17	19	162
WEEKEND									
6AM- MID	100	28	15	3	7	8	18	21	149
TOTAL WEEK	100	31	18	5	7	13	12	14	220

who only use the station on the Weekend.

Don't be misled by the percentages reported for the Monday-Friday and Weekend dayparts. They do not tell us everything we would like to know about multi-day utilization by daypart. The percent of the Monday-Friday 6A-10A daypart diary-keepers that reported listening on two days to the sample station (10%) must be interpreted as follows: they listened at least one day during the Monday-Friday 6-10A daypart, and then listened sometime on some second day. The second day of listening did not necessarily occur during the 6-10A daypart; in fact, it might have been a Weekend day.

Nevertheless, we can gain information about listening behavior by each of the daypart cume groups. In our sample, the Monday-Friday morning listeners are more likely than the listeners to any other daypart to listen five, six, or seven days per week. The Monday-Friday 3P-7P listeners are the least likely, of the Monday-Friday daypart listeners, to listen on more than one day. If the sample station has evidence of TSL problems, then a place to concentrate on fixing that problem, by promoting repeated occasions of listening across days, could be the Monday-Friday 3P-7P daypart.

We can also compare the one day listening percents for each Monday-Friday daypart to the exclusive daypart percents reported on Programmer's Package Table 6. Looking again at the sample station's 6-10A audience, we note that 4% of the listeners tune in on only one day. The tuning must have occurred during the 6-10A daypart. Table 6 (Figure 9.2) showed that 12% of the 6-10A listeners were exclusive. From Table 4 (Figure 9.5) we know that 4% only listen one day, therefore the remaining 8% must listen more than one day, but only during that daypart. Remember that high exclusive-to-daypart percents indicate lack of flow of audience across dayparts. If the number of one day listeners for that daypart displayed on Programmer's Package Table 4 approaches the Table 6 exclusive percent, we would have an indication that not only are the listeners not crossing dayparts, they are also not making optimum use of the station during the daypart in which they reported listening, by listening across multiple days of the daypart.

The percent of diaries for the average public radio station, based on our Spring 1985 sample, arrayed by the number of days on which listening to the station was recorded, sometime Total Week, is shown in Table 9.5 on the facing page. Note that those who listen just one day per week account for the largest percent of those who reported listening sometime during the broadcast week.

Table 9.5
RRC Norms: Number of Days Listening
Monday-Sunday 6AM-Midnight

Number of Days

1	2	3	4	5	6	7
29%	17%	12%	10%	14%	10%	8%

Based on Spring 1985 Data for 50 Public Radio Stations

For tracking over time, the number of days per-
cent estimates, like those shown in Table 9.5,
can be collapsed into three groupings:

Lightest Users (1-2 days)   =   46%
Moderate Users (3-5 days)   =   36%
Heaviest Users (6-7 days)   =   18%

Review of the details by daypart will be required
when shifts in the percents for each listening
group are evident.

It is also possible to track the number of days of
tuning for both the average and typical listener.
The 50% point, in Table 9.5, is reached when we
come to those who listen three days per week.
Therefore, the typical public radio listener tunes
in the average public radio station between two
and three days per week.

To determine the average number of days utilized
by the Total Week listeners, take the percents for
each number of days, multiply the percents by the
number of days, sum the results and divide by

100, since 100% is the base of the computation.
Using the public radio norms from Table 9.5:

```
        One Day Listeners = 29% x 1 Day  =   29
        Two Day Listeners = 17% x 2 Days =   34
      Three Day Listeners = 12% x 3 Days =   36
       Four Day Listeners = 10% x 4 Days =   40
       Five Day Listeners = 14% x 5 Days =   70
        Six Day Listeners = 10% x 6 Days =   60
      Seven Day Listeners =  8% x 7 Days =   56
                                   Sum  =  325
                          Divided by 100 =    3.3
```

The average public radio listener tunes in between
three and four days per week, versus the more
typical public radio station listener tune in of
between two and three days.

Changes in Time Spent Listening from one survey
to the next can be caused by changes in number
of days of tune-in, evidence of a change in the
Number of Occasions of listening.

*Programmer's Package Table 5:   Day-By-Day Per-
cent of Daypart Cume*

This Table is similar in format to Programmer's
Package Table 4.   Instead of reporting percent of
diaries based on number of days listening to your
station, the Table displays percent of diaries
based on day listened, Monday through Sunday.
The reported daily percents for Total Week repre-
sent contribution percents to the Monday-Sunday
6A-Midnight cume.

The public radio station composite distribution of
daily cume is displayed in Table 9.6.   Note that,
in general, tune-in on Saturday or Sunday, falls
below the levels reported for any day Monday
through Friday.

Table 9.6
RRC Norms: Day-By-Day Percent of Cume
Monday-Sunday 6AM-Midnight

	MON	TUE	WED	THU	FRI	SAT	SUN
	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Mean Station	48	49	48	54	50	43	35
Median Station	49	50	46	55	50	43	35

Based on Spring 1985 Data for 50 Public Radio Stations

Because of Arbitron's survey methodology, this particular table contains a built-in bias. Recall that when diarykeepers record listening for the survey week, the survey always begins on Thursday, and ends the following Wednesday. Thursday listening tends to skew high, (when diarykeeper interest is presumably highest) while Wednesday listening tends to skew low (once diarykeeper fatigue has set in). In the Monday-Friday average, however, the two skews tend to balance each other out.[*]

A Programmer's Package Table 5 layout is displayed in Figure 9.6.

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[*]Obviously, not all diarykeepers fall prey to the Thursday-Wednesday syndrome, which is why we label it a tendency. If all respondents listened to radio on Thursday, in order to have something to record in the diary, then 100% of the population would be the estimated percent of people who listen to radio in an average week. The national figure, based on Arbitron's diary survey method, is not 100%; it is 95%, meaning that one in twenty diaries are filled out and returned without any reported radio use.

Figure 9.6
Programmer's Package Table 5 for a Sample Station
Day-By-Day Percent of Daypart Cume

	(%)	MON (%)	TUE (%)	WED (%)	THU (%)	FRI (%)	SAT (%)	SUN (%)	N
MONDAY-FRIDAY									
6AM- MID	100	61	61	62	69	69	51	35	175
6AM-10AM	100	83	82	82	81	83	64	45	100
10AM- 3PM	100	73	66	71	78	71	66	51	80
3PM- 7PM	100	69	70	72	77	77	53	38	120
7PM- MID	100	68	69	71	71	82	61	46	72
6AM- 7PM	100	64	64	65	72	70	52	37	162
MONDAY-SUNDAY									
6AM- MID	100	49	49	50	55	55	59	32	220

For our sample station, 49% of the 220 diarykeep-ers who reported listening to the station at least once, Monday-Sunday 6AM-Midnight, reported listening sometime Monday, 55% reported Thursday use, while 32% reported listening sometime on Sunday. This is just another way of saying that 49% of the cume is contributed by Monday listen-ers and 32% is contributed by Sunday listeners.

Like Total Week, the percents reported for Monday through Friday for the Monday-Friday 6A-Midnight daypart, are daily contributions to that daypart's cume. The Saturday and Sunday columns represent flow from the Monday-Friday 6A-Midnight daypart to Saturday and to Sunday. For our sample sta-tion, 51% of the Monday-Friday 6A-Midnight listeners also listen sometime on Saturday while 35% listen sometime on Sunday.

The remaining percents reported on the Table for

the Monday-Friday dayparts are of little help in
understanding listening behavior. To know that
83% of the Monday-Friday 6A-10A cume listens
SOMETIME on Monday, does not provide us much
information. It does NOT tell us on which days
that cume listened during the 6A-10A daypart.
The Saturday and Sunday columns of percents do
represent flow of audience from a Monday-Friday
daypart to Saturday 6A-Midnight and Sunday 6A-
Midnight. However, more detailed flow to week-
end, daypart by daypart, is available from Pro-
grammer's Package Table 3A.

*Programmer's Package Table 8:   Tune-In, Tune-
Out and Net Listening*

Table 8 displays quarter-hour by quarter-hour
detail from 5AM to 1AM of the number of diary-
keepers who tuned in the station during the quar-
ter-hour (and whether the tuning condition was a
dial switch from some other station or from turn-
ing on the radio), and the number of diarykeepers
who turned off the station after the quarter-hour
(and whether the turning off was a dial switch to
some other station or if the radio was turned
off). In addition, the number of diarykeepers who
flowed to the next quarter-hour is displayed.
There is a Table page for each of the seven days
of the week as well as a Monday-Friday Table that
aggregates the individual weekday data.

Reviewing the data for our sample station, shown
in Figure 9.7: during the quarter-hour beginning
at 7:00, there were 55 tune-ins. Each tune-in
counts as an occasion of listening. Because the
display is an aggregate of the Monday-Friday
data, it does not tell us how many different
diarykeepers tuned in during the quarter-hour, but
only the total number of entries.

Of the 55 tune-ins, four were occasioned by a
dial switch from some other station, which station
we have no way of knowing. After the 7:00

quarter-hour, there were 16 tune-outs. Most of these (9) were a dial switch to some other station, while 7 of the tune-outs were caused by the listener turning the radio off.

Of the total number of occasions of listening during the quarter-hour beginning at 7:00, 145 continued listening into the next quarter-hour. Those 145 quarter-hours of flow were added to by an additional 15 tune-in conditions in the next quarter-hour. Therefore, the total number of quarter-hours of listening reported for the quarter-hour beginning at 7:15 is 160 (145 + 15). Of the 160 quarter-hours of listening, 54 were terminated by the end of the quarter-hour while the remaining 106 continued listening into the next quarter-hour.

Figure 9.7
Partial Programmer's Package Table 8 for a Sample Station
Tune-In, Tune-Out and Net Listening (Flow)
A Monday-Friday One Hour Period

	IN		OUT		
TIME	ON	OST	OST	OFF	NET
6:45	--	--	--	--	106
7:00	51	4	9	7	145
7:15	12	3	6	48	106
7:30	22	4	2	16	114
7:45	13	1	3	57	68

Recall that Arbitron credits a station with a quarter-hour of listening if the respondent listened to the station for five minutes in the quarter-hour. This means that tune-ins and tune-outs do not necessarily occur at the exact top and bottom of the quarter-hour listed by Arbitron. In general,

tune-ins can occur four minutes prior to the start of the quarter-hour and up to 10 minutes into the quarter-hour, while tune-outs can occur after the five-minute point in the quarter and up to four minutes into the next quarter-hour. The 15 tune-ins at 7:15 probably occurred sometime between 7:11 and 7:25, while the 54 tune-outs at the "end" of the quarter-hour probably occurred sometime between 7:20 and 7:34. When looking at tune-ins, think of them as the first quarter-hour for the occasion of credited listening to your station; tune-outs are, then, the last quarter-hour for the occasion of credited listening to your station.'

Programmer's Package Table 8 provides an outline of how your listeners listen to your station. A review of the tables will provide knowledge about which quarter-hour periods are most likely to attract new listening (tune-ins), and which are most likely to sustain listening (net or flow from preceding quarter-hour). Also available are those quarter-hour periods that cause tune-out (tune-out conditions at the end of the preceding quarter-hour). Tune-outs should be watched carefully to determine if the tune-out was a radio off condition or a dial switch to some other station. You have less control over a radio off tune-out than a dial switch. The radio off condition will be caused by the overall listening behavior of the respondent or by the fact that your station is not offering the respondent a reason to stay tuned. The good news is that neither is any other station. However, a tune-out condition caused by a dial switch to some other station means that your listener has found a station offering programming that is

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'Thinking of tune-ins and tune-outs in this way, instead of looking at them in terms of exact times, makes even more sense when we consider that Arbitron does not have a "continuous listening" rule for application of listening credit. A quarter-hour of listening means listening during ANY five minutes within the quarter-hour. The minutes listened do not have to be contiguous.

more appealing than yours at the time of the tune-out.

Many of the Programmer's Package Tables supply indicators of change from survey to survey in the Number of Occasions of Listening.   Table 8 is no different.   The information in Table 8, also supplies the data for the missing factor in the Time Spent Listening equation: Average Duration per Occasion.

From Figure 9.7 for our sample station, we know that, for the quarter-hour beginning at 7:00, there were 161 occasions of listening.   One hundred six were caused by flow from the preceding quarter-hour, while the remaining 55 were due to tune-in during the quarter-hour.   During the 7:15 quarter-hour, there were 15 more new occasions of listening, the tune-in to the station.   New occasions of listening during the 7:30 and 7:45 quarter-hours were 26 and 14, respectively.   The number of occasions of listening during this hour sum to 216.

We also know, from Figure 9.7, the total number of quarter-hours of listening during the 7:00 hour. For each quarter-hour, we add the tune-in counts to the flow from the preceding quarter-hour.   The 161 quarter-hours of listening during the 7:00 quarter-hour are supplemented by 160 during the 7:15 period, 132 during the 7:30 quarter-hour, and 128 during the final quarter-hour of the hour. The quarter-hours of listening during this hour sum to 581.

If occasions equal 216, and quarter-hours of listening equal 581, then average duration per occasion during the hour beginning at 7:00 is 2.7 quarter-hours (quarter-hours of listening divided by number of occasions).   Based on the data provided in the Table 8 displays, both Number of Occasions and Average Duration per Occasion can be tracked from survey to survey to aid in the explanation of time spent listening changes.   If you have attempted implementation of a strategy to promote tune-in for one more quarter-hour,

on each occasion of listening, Table 8 provides the data to determine if the duration per occasion of listening has increased.

We do not necessarily recommend that occasions and duration be tracked hour by hour, day by day. The data are estimates, based on a sample of listeners; the more discretely you attempt to refine the data, the more likely you are to experience fluctuations due to sample error. Trending the information by the major Monday-Friday dayparts, and Weekend 6A-Midnight, plus Total Week, provides you with a lot of material. Because these are the dayparts included in Programmer's Package Table 7, gross quarter-hours of listening, by major daypart, has almost been provided for you. If you multiply the average Time Spent Listening in quarter-hours from Table 7 for the daypart of interest by the number of quarter-hours you are on the air during the daypart, you have gross quarter-hours of listening that is directly comparable to the number of occasions of listening derivable from Table 8.

For those stations that order it, the RRC provides graphs based on the Table 8 data for Monday-Friday, in total and by smaller time periods, and for Saturday and for Sunday. The graphs display the total number of quarter-hours of listening for each quarter-hour. The full day graphs (Monday-Friday, Saturday and Sunday) display the data on a half-hour by half-hour basis. The patterns of listening for the current survey are compared to those from a previous survey and an index of change is graphically represented. The index is adjusted to compensate for the different number of diaries in which a station may have been recorded in different surveys, allowing a representation of the change in quarter-hours of listening exhibited by the (unweighted) cume, without regard to the size of the cume. The graphs are a snapshot of the ebb and flow of audience throughout the broadcast day.

A final graph compares Saturday and Sunday to

the average day Monday-Friday.   The graph sup-
plies a quick recap of the strengths and weak-
nesses of the appeal of the programming offered
during different parts of the week.   Typical usage
of the station, Monday through Friday, is some-
times obscured in the Monday-Friday graphs,
since they represent an aggregate of five days of
listening.   By reducing Monday-Friday data to an
average day, in the final graph, direct comparisons
to the single day data compiled for Saturday and
Sunday can be made.   If your Monday-Friday aver-
age day, Saturday, and Sunday curves do not
resemble the curves displaying Listening to Radio
Throughout the Day (Figure 3.1), then your listen-
ers are likely not using your station the way that
they use radio overall.

For stations that do not carry consistent program-
ming in a time period across all days Monday-
Friday, the daily detail provided in the Table 8
displays allows comparison of individual program
performance across days.   For example, you may
carry a varied strip of Public Affairs programming
from 6:30-7P, Monday through Friday.   Comparative
performance of each of the components is available
in Table 8.   Beware, however, of the potential
Thursday/Wednesday bias that may exist, discussed
above under Programmer's Package Table 5.

*Programmer's Package Tables 9 and 10:   Top 10
Stations Sharing Your Audience*

We noted in our review of Programmer's Package
Table 8 data that we can see when the radio dial
is being switched from your station to another
and vice-versa, but we had no way of knowing
which other station.   While Tables 9 and 10 do
not explicitly provide data about when audience
crossover to another station occurs, they do tell
us which other stations your listeners are most
likely to also tune in.

Most of the diarykeepers who reported listening

to your station sometime Monday-Sunday 6AM-
Midnight also listened to other radio stations.
Those ten stations, included on the AID database,
most recorded by your listeners, at least once
Monday-Sunday 6A-Midnight, are displayed on
Programmer's Package Tables 9 and 10.

Figure 9.8
Programmer's Package Table 9 for a Sample Station
Top Ten Stations Sharing Your Audience

	MONDAY - SUNDAY 6AM-MID			WEEKEND 6AM-MID		
	SHARED	TSL	N	SHARED	TSL	N
	(%)	(Q.HRS.)		(%)	(Q.HRS.)	
WAAA-FM (Client)	100	32.5	220	100	13.8	149
WBBB-AM	41	26.1	91	28	8.5	42
WCCC-FM	24	19.0	52	13	6.0	20
WDDD-FM	21	32.6	46	11	10.2	17
WEEE-FM	16	15.5	35	5	7.4	8
WFFF-AM	15	20.3	32	7	12.9	10
WGGG-FM	15	30.6	32	7	10.0	11
WHHH-AM	12	27.3	26	5	10.8	8
WIII-FM	10	12.7	23	7	8.5	10
WJJJ-FM	10	27.1	22	3	8.0	5
WKKK-FM	9	13.9	20	2	6.7	3

Our sample client station, in Figure 9.8, was
reported in 220 diaries at least once sometime
Monday-Sunday 6AM-Midnight. Average time spent
listening to the station by all of those listeners
was 32.5 quarter-hours. Forty-one percent of
those diaries also included listening sometime
Monday-Sunday 6A-Midnight to WBBB-AM. The
average time spent listening in those 91 diaries to
WBBB-AM was 26.1 quarter-hours.

Since 41% of the sample station's listeners listened
to WBBB, we also know that 59% did not. From
the RRC's Analysis of Diary Mentions, we can

determine in how many total diaries WBBB, the
station with which WAAA shares audience most,
was recorded, and construct a table of sharing
between the two stations. We have assumed in
the construction of Table 9.7 that WBBB-AM was
reported in a total of 152 diaries.

Table 9.7
Two-Way Sharing for a Sample Station

	Number of Diaries	Shared Diaries		Diaries Not Shared	
		Number	Percent	Number	Percent
WAAA-FM	220	91	41	129	59
WBBB-AM	152	91	60	61	40

Because a larger percent of WAAA diarykeepers
did not report listening to WBBB than the reverse,
our sample station "wins" the sharing battle. For
trending sharing over time, it may be helpful to
compute the size of the win (or loss) by deriving
an index of sharing between stations. The index
is computed by dividing your percent shared into
the percent shared of the other station. WAAA's
index of sharing with WBBB, in the above example,
is 1.46 (60% divided by 41%). The index, then,
can be tracked from survey to survey. If the
index increases, WBBB is becoming less important
to your listeners. If the index declines, WBBB is
becoming a more important factor in the listening
behavior of your audience.

From our Spring 1985 public radio station sample,
we have computed the typical percents of sharing,
Monday-Sunday 6A-Midnight, reported for the top-
most shared station through the fifth most re-

ported station, in Table 9.8.

Table 9.8
RRC Norms: Penetration of Top Five Shared Stations

	Percent of Total Week Diaries
First Station	33
Second Station	27
Third Station	22
Fourth Station	18
Fifth Station	16
Sum of Five Stations	116

Based on Spring 1985 Data for 50 Public Radio Stations

Station sharing should really be considered a
market-specific phenomenon. The competitive
factors in your market place will drive the sharing
percents reported for your station. An increase
in the sum of the shares for the top five stations,
over time, means increased competition for the
time spent listening to radio by your listeners.
This may be a function of a broadened appeal on
your part (evidenced by greater reach). Or, it
may be a function of other stations offering
programming that is closer in appeal to what you
have been offering than in the past. Conversely,
a decrease in the sum of the shares is normally
evidence of a strengthened position of your station
in relation to the competition in your market
(although it can also mean a narrowing of your
audience which is not necessarily good).

The list of stations with whom you share most of
your listeners should be compared to the list of

stations identified as the major competitors for
your target demographic from the local market
report.   The extent to which the two lists are
different is an indication of not providing pro-
gramming that is appealing to the mainstream of
your target.   Identify each of the shared stations
by format.   While the variety of formats included
may almost be overwhelming, they are an indica-
tion of the variety among your listeners.   If there
are multiple stations from the same format, it
may mean that there is a particular format that is
quite compatible with yours, according to your
listeners.   If there is such a group of stations,
tracking gross sharing points (sum of the shares),
will be helpful in determining how you stack up
against the competition, according to your listen-
ers, over time.

Programmer's Package Table 9 for our sample
station (Figure 9.8) indicates that average time
spent listening to WBBB in the shared diaries was
26.1 quarter-hours.   This is not the average dura-
tion of listening reported by the WBBB cume.   It
is only the average TSL reported by that portion
of the WBBB cume that also reported listening to
WAAA.   Note that Table 9 does not include a
comparable TSL for WAAA.   The TSL reported for
WAAA is the average TSL across all of the diaries
in which WAAA was recorded, the same TSL
reported on Programmer's Package Table 7.   The
average TSL for WAAA in just those 91 diaries
that also listen to WBBB is not reported any-
where.   Because of the different bases for the
TSL's reported in the TSL column, direct compar-
isons are not valid.

The Weekend 6AM-Midnight section of Program-
mer's Package Table 9 shows how many of your
weekend listeners reported listening to your Top
10 Shared Stations, along with average weekend
TSL for the station in those diaries.   This is not
necessarily a roster of the stations with whom
you share most of your Weekend listeners,
particularly if you have a large Monday-Friday
only group of listeners that have therefore influ-

enced the Total Week sharing counts. The basis for all of Tables 9 and 10 is the Top 10 most-shared stations, Total Week. Hence, the Weekend display will show the likelihood of only those Top 10 stations having been reported on the Weekend by your Weekend cume.

Programmer's Package Table 10 shows how many of your Monday-Friday listeners reported listening to your Top 10 Shared Stations, along with average Monday-Friday TSL for the station in those diaries. Once again, this is not necessarily those stations with whom you share most of your Monday-Friday audience, particularly if your Total Week audience includes a large segment of Weekend Only listeners. The display also includes the percent of your Monday-Friday listeners that reported listening to the shared station, by Monday-Friday daypart.

Figure 9.9
Programmer's Package Table 10 for a Sample Station
Top 10 Stations Sharing Your Audience

| | M-F 6-10 | M-F 10-3 | M-F 3-7 | M-F 7-MID | M-F 6AM - MID | | |
					SHARED	TSL	N
	(%)	(%)	(%)	(%)	(%)	(Q.HRS.)	
WAAA-FM (Client)	57	46	69	41	100	29.1	175
WBBB-AM	24	14	15	11	32	19.8	56
WCCC-FM	13	5	11	7	18	20.0	32
WDDD-FM	6	3	8	9	14	24.6	25
WEEE-FM	10	3	4	3	13	11.0	23
WFFF-AM	11	5	9	3	14	16.3	25
WGGG-FM	9	7	10	8	15	24.0	27
WHHH-AM	5	3	3	5	9	24.4	15
WIII-FM	2	2	6	5	9	11.9	15
WJJJ-FM	6	4	7	3	9	28.9	15
WKKK-FM	5	2	6	4	9	12.1	15

Thirty-two percent of our sample station's Mon-
day-Friday 6A-Midnight listeners reported listen-
ing to WBBB during that time, shown in Figure
9.9.   Twenty-four percent of WAAA's Monday-
Friday listeners listened to WBBB during the 6A-
10A daypart.   No other of the Top 10 Total Week
shared stations approaches that percent of WAAA
Monday-Friday listeners.   But since WBBB overall
shares the most WAAA listeners, it is not neces-
sarily surprising that they are the highest percent
reported for a daypart.   To comprehend the rela-
tive importance of the shared stations by daypart,
additional computations are necessary.

Working with only the most important stations to
the Monday-Friday cume, the top two or three
that share the highest percent of Monday-Friday
diaries, we can construct a different kind of
sharing table.   What we want to determine is:
percent of the shared cume that listens to the
shared station by daypart.   For WBBB, 6-10A, we
divide the reported 6-10A percent (24%) by the
overall Monday-Friday shared percent (32%) and
express the result as a percent (75%).   Seventy-
five percent of those who listen to both WAAA
and WBBB, sometime Monday-Friday, listen to
WBBB 6-10AM.

Table 9.9
Relative Sharing Penetration by Daypart
for a Sample Station

	M-F 6-10	M-F 10-3	M-F 3-7	M-F 7-MID	M-F 6AM-MID SHARED
	(%)	(%)	(%)	(%)	(%)
WBBB-AM	75	44	47	34	32
WCCC-FM	72	28	61	39	18
WGGG-FM	60	47	67	53	15

Station WGGG, from Table 9.9, is relatively more
important to the WAAA/WGGG shared cume in
every daypart except 6-10A than the other listed
stations are to the cume they share with WAAA.

While Programmer's Package Table 10 shows the
percent of Monday-Friday listeners who report
listening to your station by daypart (daypart
contribution percents again), we have no way of
determining where sharing within daypart is occur-
ring.   While looking at Table 10 (Figure 9.9), it is
tempting to compare the 57% contribution percent
for WAAA 6-10A with the 24% shared percent of
WBBB 6A-10A.   However, the two percents are
not compatible.   While we know that 24% of the
WAAA's Monday-Friday listeners tune to WBBB in
the morning (and that this accounts for 75% of the
Monday-Friday sharing between the two stations),
we do not know when those shared listeners are
listening to WAAA.

*Programmer's Package Tables 1 and 11:   Distribu-
tion of Diaries by Zip Code*

These two tables are the only ones in the Pro-
grammer's Package that are not directly related to
listening behavior.   What these tables include is a
count of your diaries by Zip Code by county.
Table 1 includes a count of diaries by ethnic
group (Blacks, Hispanics, and Others) by Zip, if
the county was controlled for an ethnic group
population.   Table 11 includes a count of the
diaries that reported listening to your top five
shared stations by Zip within county.

Diary count by county can be compared to the
county sample size listed in the introductory
section of the local market report.   County Pene-
tration Percents (unweighted Diary Reach) can
then be computed to compare penetration across
the geographic components of the survey area, for
those geographies where audience projections are
not available.

The zip codes of your diary respondents, once ascertained, can be reviewed for their socio-economic characteristics such as income, education and median housing value. Such information is available from any number of market research organizations, including Arbitron, and is likely available for your local area at the local library or Department of Commerce. A pattern of listening attributable to certain types of zip codes allows inferences about your audience (how much they make, how educated) that are not solely based on sex/age characteristics.[*]

The Mechanical Diary

All of the Tables included in the Programmer's Package could be constructed from an Arbitron product called a Mechanical Diary, although the time required to tabulate the data might be prohibitive. One advantage of the Mechanical Diary is that the PPDV's (diary weights used to project the audience estimates), are included for each diary. Programmer's Package type tables, if constructed, could be done using weighted data that could be compared directly to your station estimates.

Available in the Mechanical Diary is information not provided in the Programmer's Package. Refined details of diary sharing, the information that's missing from Tables 8, 9, and 10 of the Programmer's Package, can be tabulated from the Mechanical Diary. The times when your listeners have reported listening to other stations is included in the Mechanical Diary. You can isolate those diaries that report a particular competitor, in addition to your own station, so that you can compute comparitive time spent listening to both

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[*]See also Chapter 10, Customized Data, and Chapter 12, Audience Estimates from a Development Viewpoint.

stations.

Figure 9.10
Sample Mechanical Diary Display for a Partial Diary

County	R	W	Diary Home P		Sex	Age	Zip	PPDV	Total QH	Station	QH
35109	2	3	3003	1-X	M	32	70334	1329	100	WAAA-FM	12
										WBBB-FM	44
										WCCC-AM	42
										WDDD-FM	2

Day	Call	AF	Loc	Start	Stop
1	WAAA	FM	1	0630A	0700A
1	WBBB	FM	2/C	0830A	0930A
1	WBBB	FM	2/C	0600P	0645P
2	WAAA	FM	1	0615A	0645A
2	WBBB	FM	2/C	0800A	0830A
2	WBBB	FM	2/C	0530P	0615P
2	WCCC	AM	1	0900P	0945P
3	WAAA	FM	1	0630A	0715A

. . .

[Note: A fairly comprehensive How-To-Read is included with each Mechanical Diary Printout to enable you to decode the information in the display. Thus, for example, you could decipher the county name for county "35109"; that "R" means Race and that Race Code 2 means the Black ethnic group; that "W" represents a Work Code and that Work Code 3 means the respondent (a Male, 32 years old) works away from home for 30+ hours per week.]

The Mechanical Diary is a printout of all of the diaries that recorded listening to your station. For each diary, the ethnic group (if identified by Arbitron), sex and exact age of the respondent is displayed along with the total number of quarter-

hours of listening to radio, and to each station reported in the diary. Day by day, the respondent listening is printed to include: the station listened to, the start and stop time of listening (after it has been converted from actual time to quarter-hour periods), and where the listening occurred if at-home or away, including a delineation of in-car versus some-other-place away from home.[11]

Listeners that listen to your station, and no other, are easily identified. Therefore, your exclusive cume can be tabulated along with the average time spent listening by that cume. But far more evident will be the display of stations with which you share your listeners. Any one at your station who thinks they are programming for, or are being heard by, a highly loyal and exclusive listening audience only needs to see a mechanical diary once to change their minds.

Each diary in the printout represents listening behavior at the individual diarykeeper level. Such information is not available from any other Arbitron product. The only way to get closer to individual listening behavior, the way it actually occurs, is to visit the Arbitron offices in Laurel MD to review the diaries returned by all respondents in your market.

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[11]An unfortunate fact in the Mechanical Diary is that the reported listening has not been adjusted (truncated) for actual broadcast schedules. It is, therefore, possible to see listening recorded to a station, including yours, when that station was not on the air.

Chapter Ten

Customized Data

Non-commercial stations located in Arbitron-meas-
ured markets have access to a full array of audi-
ence data via Arbitron's on-line database, AID.
When processing audience estimates, the RRC
almost always processes that information that can
be compared to the data presented in the local
market report. Therefore, both dayparts and
demographics and geographies are standardized
information. However, this is not the only infor-
mation available to stations.

Audience breakdowns for special time periods, or
for only a portion of the survey period, or for
just the Black or Hispanic audience, or for special
geographies are all available. Because these types
of estimates are not standardized, though, they
cannot be placed in the context of radio use
(since radio use is currently only available in the
local market report), so there are some limitations
on application. Many of these additional breakouts
of audience data may be useful to the programming
staff as a means of providing program specific
data, or to the development staff as a means of
enhancing the station in the eyes of a potential
underwriter.

Audience Estimates for Formats

Many non-commercial stations offer programming
in format blocks (eg., a block of news and infor-

mation followed by a block of music followed by
another block of news and information and then
some more music but maybe of a different genre).
These program blocks may not be wholly contained
within standard broadcast dayparts. Determining
the success of a format by examining just standard
dayparts can therefore sometimes be difficult.

Because AID allows the processing of dayparts
that are not limited to those used to define the
standard broadcast day, audience estimates for
any time period can be generated. Of use for
stations that employ a block progamming technique
are audience estimates that are specific to the
period(s) of time in which a particular format is
aired.   The audience estimates generated can be
the standard Average Quarter-Hour and Cume
Persons estimates, allowing trending of both cume
and time spent listening by format over time.   Or,
the audience estimates may be a Cume Persons
Only run that concentrates on the amount of
duplication (and lack of duplication) of audience
between formats.

For example, if you are programming classical
music from 9AM until 1PM and then jazz from
1PM until 5[1], and you have a time spent listening
problem evident in the 10A-3P daypart, the prob-
lem can stem from one of several causes: the
classical cume may not listen to classical for very
long, or the jazz cume may not listen to jazz for
very long, or the classical listeners may not listen
to the jazz block and vice-versa.   Examining data
that provides the amount of cume that uses both
classical and jazz, and the amount that is exclusive
to each, lets you get closer to the heart of the
TSL problem.

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[1]This is for example purposes only and
should not be construed as a recommendation.

Audience Estimates for Programs

The Average Quarter-Hour and Cume AID run or
the Cume duplication run does not have to be
limited to time periods delineated by format.   AID
is capable of generating estimates for any time
period as small as a quarter-hour on a single-day - ——
to as broad as Monday-Sunday 24 Hours.

Several stations broadcast programming on Friday
that is a little different from that broadcast
Monday through Thursday.   The Monday-Friday
audience estimates give you no information about
the relative appeal of the two different types of
programming offered.   At times, audience estimates
for specific days may be required to aid in deci-
sion-making, if the day-by-day unweighted data in
the Programmer's Package, discussed in Chapter 9,
is not enough.   When audience projections are
required, the AID system can be used.

Audience Estimates for Special Events

Stations that carry sporting events, or simulcast
TV programs, or other specialized programs that
are not carried consistently across all weeks of
the survey, may want or need to measure the
appeal of that specialized programming.   The AID
system allows any user to selectively process
audience estimates by week (or combinations of
weeks) of the survey period.   These weekly audi-
ence estimates are reported as projections to the
full population, based on a ratio estimating proce-
dure.   By utilizing this feature of AID, stations
can determine if the special programming helped
or hindered the average estimate for the time
period based on all twelve weeks of the survey.[2]

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[2]Note that an audience estimate based on
just on one week of a twelve week survey is ·
highly unreliable, since the sample base for the
estimate is only about one-twelfth of the total.

Audience Estimates for Ethnic Groups

Stations who have some appeal to an ethnic popu-
lation, when Arbitron has established sampling
controls for that population, may want to examine
their audience estimates for a demographic that is
defined by the ethnic group.   Only Black and/or
Hispanic Ethnic Groups are available for examina-
tion and only in some markets. If your market is
controlled for an Ethnic Group, it will be noted
on Page 3A and Page 5B of your local market
report.

If most of your audience is attributable to either
Blacks or Hispanics, then generating audience
estimates by daypart for that Ethnic Group will
not provide you with any "new" audience, since
the estimates for the Ethnic Group are already
reflected in your Total Persons estimates.   How-
ever, an ethnic breakout would provide you with
ratings specific to that population, which would
always be larger than those calculated on the
basis of the total market population.   Additionally,
if any "ethnic" programming is specific to just
parts of the weekly broadcast schedule, you may
want to break out those periods by Ethnic Group
to measure their effectiveness.

Audience Estimates for Special Geographies

Our chapter on the AID Market Summary Report
highlighted the availability of audience data for
selected counties within a market.   Audience
estimates may be generated for any single county
or group of counties that are contained within
the market.

AID allows you to go one step further. You have the ability to process audience estimates for specific Zip Code(s). Development personnel at non-commercial stations may utilize this AID option to enhance underwriting prospects. Average socio-economic statistics (ie., income, education level, housing value) by Zip Code are available from many marketing research firms, including Arbitron. The Zip Code location of Arbitron diarykeepers that reported listening to your station is available from the Programmer's Package and/or the Mechanical Diary.

For many stations, it is possible to match up the station's Zip Code strength with specific socio-economic characteristics that match the needs of the potential underwriter. By eliminating from an audience projection the Zip Codes in which the station is not strong, you can enhance the Ratings for the station. Percent penetration will be increased as you focus in on your station's listeners.[2]

Audience estimates are also available based on "Lifestyle Clusters", those defined by either Claritas in its PRIZM system or Donnelley Marketing in its CLUSTERPLUS system. Both systems are market segmentation systems, with segmentation based on the socio-economic characteristics of Zip Code residents. The assumption in the segmentation is that those people who live in close proximity (ie., in the same Zip Code) are likely to exhibit many of the same socio-economic characteristics: income level, education level, and more.

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[2]Because Arbitron has not established controls to ensure that the Zip Code population is properly represented in the universe, the population and persons estimates reported on the AID output are not good measures. Recall, though, that the population is a sum of the weights for the diaries returned from the Zip Code(s). The Rating Percents, computed against this "sum of the weights universe" on the AID report are usable estimates.

The assumption continues that these like characteristics result in similar lifestyles, particularly product consumption behavior. Zip Codes of like characteristics can be "clustered" to project behavior.

If you believe that your station appeals to a certain type of listener (type defined by socioeconomic characteristics), and you can identify those underwriters that should wish to appeal to those same listeners, then audience estimates broken out by "Lifestyle Cluster" may be appropriate and very beneficial.

If you accept the geodemographic segmentation assumptions, then audience estimates by "Lifestyle Cluster" may also help you understand the demographic composition of your audience, on characteristics not solely dependent on sex and age.

Section Three

For Development and More

Section Three

Introduction

When utilizing audience data for programming
purposes, the outlook on the data analysis tends
to be negative. Programmers need to learn what
elements are not working so that they can be
fixed. If the size of the cume is too small or if
time spent listening by the cume is too short, the
programming of the station is not appealing ade-
quately to the potential audience. Sometimes
schedule tinkering is required; at other times an
emphasis on promoting an audience to listen longer
or to tune-in again is the prescription. Utilization
of the audience data will indicate what strategies
are required to improve the station's appeal. The
audience results from successive surveys will
indicate if the strategy implementation was effec-
tive or not.

The Development staff of the station, however,
needs to learn the positives of the station's audi-
ence to ensure that the station is always presented
in the best light to potential underwriters. While
programmers must understand the needs of the
audience and react when it's apparent they are
not being fulfilled, the Development staff must
comprehend the needs of the potential underwrit-
ers, so that a station's audience data can always
be presented in a format that shows the station
can meet those needs. Often this will require
presenting data in terms that the underwriter
understands, terms utilized every day by buyers
and sellers of commercial broadcast time.

Included in this section are definitions of some of
the most commonly used broadcast advertising
terms, as well as how to use the station's Average
Quarter-Hour and Cume estimates to derive the
numbers.   The numbers are not necessarily exclu-
sive to the domain of development however.
Programmers can also make use of these computa-
tions.   When you stop to consider that supplying
station identification, or promoting an upcoming
program segment, is "advertising" for the station,
then the applicability of some of the concepts
behind the terminology may be more apparent.

Chapter Eleven

GRP's, CPM, and R&F

One critical term in buying and selling advertising
in any medium is "impressions". Advertisers need
to know how many impressions a single advertise-
ment, or a schedule of advertisements, will make.
The impressions delivered by a single advertise-
ment, randomly placed during a daypart, is equal
to a station's Average Quarter-Hour persons esti-
mate during that daypart. At any given point in
time during the daypart, we expect that a certain
number of people will be listening. In radio,
"point in time" is a quarter-hour; the expected
number of people listening during any quarter-
hour is equal to the Average Quarter-Hour Persons
estimate.

Impressions (for one announcement) = AQH Persons

Gross Impressions

Virtually no advertiser schedules just one an-
nouncement; the advertiser is more likely to pur-
chase multiple announcements that can be randomly
placed in specific dayparts. When the advertise-
ment is broadcast multiple times throughout the
daypart, the number of impressions generated by
the advertisement is equal to the station's Average
Quarter-Hour audience multiplied by the number
of times the advertisement was broadcast. The

result is called Gross Impressions. The term
"gross" is used because there is no attempt to
identify how many different people are being
reached by the advertisements, only the sum of
the number of people reached by each announce-
ment, no matter how many times those people may
have been reached.

Gross Impressions = AQH Persons * Number of announcements

Let's assume that a station has an Average Quar-
ter-Hour estimate of 8,500 persons during the
Monday-Friday 10A-3P daypart. Any single offer-
ing carried by the station during that daypart,
whether it be an advertisement or an underwriting
credit, a station identifier or promotion, or a
record cut, would, on average, be heard by 8,500
persons. That same offering carried again, at
some other point in time during that daypart,
would also be heard by 8,500 persons, on average.
We do not know how many persons heard both
offerings, or only one. We do know that, in
total, there were 17,000 impressions made by the
two announcements. Increase the number of
times the announcement is carried and you pro-
portionately increase the number of impressions
generated by the announcement. Twelve announce-
ments during midday on our station, with an AQH
of 8,500, will yield 102,000 impressions.

The term "impressions" is a euphemism for total
time spent listening. Recall from several of the
preceding Chapters, that one of the steps in
computing the amount of time spent listening by
the cume is the following formula:

$$\text{Total QH's of Listening} = \text{AQH Pers} * \text{Number of QH's in Daypart}$$

In the Gross Impressions calculation, we simply
substitute "number of announcements" for "number

of quarter-hours in daypart". An impression is simply a single quarter-hour of listening. Gross Impressions is the sum of all of the quarter-hours of listening when an announcement was scheduled.

Gross Rating Points

Sometimes advertisers will look at Gross Rating Points (GRP's) instead of Gross Impressions. The concept behind the two terms is the same. While Gross Impressions is based on the AQH persons estimate, though, Gross Rating Points is the accumulation of the AQH rating for each advertisement placed.

GRP's = AQH Rating * Number of announcements

Cost Per Rating Point

Rating Points can also be converted to cost figures. The cost of buying one announcement on a station divided by the station's AQH Rating yields Cost per Rating Point.

Cost Per Thousand

When examining cost effectiveness of stations, advertisers will often compute the CPM, or cost-per-thousand, for each station. This is another way of asking how much it costs to make 1000 impressions. If each announcement costs the advertiser $10, and each announcement delivers 8,500 (or 8.5 thousand) impressions, then the cost per 1000 impressions is easily computed:

		Cost per		Impressions per
CPM	=	Announcement	+	Announcement, in thousands
$1.18	=	$10.00	+	8.5

Because you have commercial station audience estimates available in the local market report, if you are aware of the amount those stations charge advertisers for broadcast time during different dayparts, you have all the information required to compute the cost effectiveness, in terms of CPM, for those stations. Performing the CPM calculation for a number of stations will give you a sense of what air time is worth in your market, and will help to give you a reasonable sense of what you might be asking program underwriters to pay for underwriting credit.

Reach and Frequency

Gross Impressions and Cost Per Thousand only take into account the size of the Average Quarter-Hour audience, without regard to how that audience was derived, whether by sheer size of cume, or a smaller cume with extensive time spent listening. Most advertisers are also interested, though, in how many times listeners will hear an advertisement, that is, with what frequency. It is high frequency that works to get any message across to an audience. A significant count of Gross Impressions does not always result in listeners hearing an announcement multiple times. If a station's total time spent listening in quarter-hours is more a reflection of size of cume, rather than substantial durations of listening by that cume, then a large number of Gross Impressions will not result in high frequency. Frequency is a euphemism for Average Time Spent Listening.

Frequency =   Gross Impressions   +   Reach

Average TSL = Total QH's of Listening + Cume

Assume the following audience, Monday-Sunday
6AM-Midnight:

AQH Persons   =   8,500
Cume Persons =   119,900

Using these estimates we can compute Gross Im-
pressions, assuming that we run an announcement
once in every quarter-hour, and then the Fre-
quency with which those announcements were
heard:

Impressions   =   AQH Persons * # of Announcements
4,284,000   =   8,500   *   504

Frequency   =   Impressions +   Reach
36   =   4,284,000   +   119,900

[Note that this is the same calculation as:

Total QH's of Listening = AQH Persons * # of QH's

Avg TSL = Total QH's + Cume]

The computed Frequency, being the same as aver-
age time spent listening, means that the average
listener tunes in for 36 quarter hours during the
broadcast period.

In commercial radio, "reach and frequency" is
terminology used to describe the listener impact
of a schedule of commercials. All broadcasters can

use the concept to determine the effectiveness of
any on air activity -- pledge breaks, underwriting,
record rotation, PSA's, and more, all of which
we'll keep lumped together under the broad label
of "announcements."

If a station carries one announcement sometime
during the broadcast week the probable impact of
that annoucement will be equal to the station's
Average Quarter-Hour estimate. The probable
reach of the announcement can be estimated as
the station's AQH persons, with an average fre-
quency of one. If a station carries the same
announcement in every quarter-hour of the broad-
cast week, then the reach of the announcement
will be equal to the station's cume, while fre-
quency will be equal to the station's average TSL
in quarter-hours.

However, virtually no one uses just one announce-
ment, nor does anyone run an announcement
during every single quarter-hour of the broadcast
period.   Instead stations generally run a schedule
of announcements, for which we can easily deter-
mine the minimum reach and the maximum reach
possible, and with a little work, the probable
reach.   Examining the question in terms of the
laws of probability can supply some answers.

There are some rules, of course. We must know
the AQH and Cume Persons estimates for the
broadcast period during which the announcements
will run, and we must assume that the announce-
ments are randomly placed within that broadcast
period.   The random placement is important to
insure that the reach of each single announcement,
on average, approaches the AQH estimate for the
time period.

Let's assume a schedule of announcements to be
carried during the Monday-Friday 6A-10A period,
and use the following station estimates:

```
AQH Persons =  9,500    (Minimum Reach of Schedule)
Cume Persons = 58,400   (Maximum Reach of Schedule)
```

The Monday-Friday 6A-10A time period covers 80 quarter-hours (5 days times 4 hours each day, times 4 quarter-hours each hour) and we know that the station is broadcasting the entire time. (If the station had actually signed on at 6:30 each day, then the broadcast period would only have included 70 quarter-hours). Therefore, the frequency for the average listener is 13 times (or an average time spent listening of 13 quarter-hours during Monday-Friday 6A-10A).

```
Impressions = AQH Persons x # of QH's in Daypart
   760,000  =    9,500    x          80
```

```
Frequency = Impressions ÷    Reach
    13    =    760,000   ÷   58,400
```

We know based on the AQH, that if the station runs one announcement it will be heard once, on average, by 9,500 people. This means 48,900 people will not hear the announcement, determined by subtracting the number of people who did hear the announcement from the total cume for the daypart.

The probability for reaching these new listeners with a second announcement randomly placed sometime during the remaining 79 quarter-hours in the daypart is their average length of tune-in of 13 quarter-hours divided by 79 quarter-hours. This probability factor must then be applied to the number of available new listeners to determine how many were reached. The result will allow us to determine how many people were reached by both announcements and how many were not reached. The "how many not reached" gives us a new "available cume to be reached" by the

placement of an additional announcement in the
remaining 78 quarter-hours.   With patience and a
calculator, one can construct a Reach Table for
varying numbers of announcements based solely on
probability.

Table 11.1
Reach Calculations for Varying Number of Announcements

Based on Cume of 58,400 and Average TSL of 13 QH's

Available Cume	Annouce-ment #	Reach Probability	New Cume Reached	Total Cume Reached	Cume Not Yet Reached
58,400	1	.1625	9,500	9,500	48,900
48,900	2	.1646	8,000	17,500	40,900
40,900	3	.1667	6,800	24,300	34,100
34,100	4	.1688	5,800	30,100	28,300
28,300	5	.1711	4,800	34,900	23,500
23,500	6	.1733	4,100	39,000	19,400
19,400	7	.1757	3,400	42,400	16,000
16,000	8	.1781	2,800	45,200	13,200
13,200	9	.1806	2,400	47,600	10,800
10,800	10	.1831	2,000	49,600	8,800
.	.	.	.	.	.
.	.	.	.	.	.
3,900	15	.1970	800	55,300	3,100
.	.	.	.	.	.
.	.	.	.	.	.
1,300	20	.2131	300	57,400	1,000

Definitions for each of the column headings in
Table 11.1 are shown on the facing page.

Definitions for Table 11.1 Column Headings

Available Cume: Cume Persons not reached by a previously placed announcement. For the first spot this is always equal to the cume for the daypart.

Reach Probability: the average Frequency divided by the number of available quarter-hours in which an annoucement can run. For the first announcement, available quarter-hours is equal to the number of quarter-hours in the daypart that the station is on the air; for succeeding announcements, the available quarter-hours is the total daypart quarter-hours less the number of announcements already scheduled. The average Frequency is the same for all announcements.

New Cume Reached: the result of multiplying the reach probability and the available cume.

Total Cume Reached: the sum of the new cumes reached by each additional announcement.

Cume Not Yet Reached: the Cume for the daypart less the Cume that has already been reached by previously scheduled announcements. This is equal to the available cume to be reached by the next announcement.

The laws of probability dictate that in order to reach the entire cume for the daypart, 68 announcements must be scheduled. This is determined by taking the number of quarter-hours in the daypart, plus one, and subtracting the average frequency (or average TSL). Obviously, the assumption is that every listener listens the same number of quarter-hours.

Given probability, then, we can estimate how
many people are reached by a varying number of
randomly placed announcements. To determine
the frequency with which the announcements were
heard is a much easier calculation. Simply deter-
mine the impressions created by the number of
announcements and divide that figure by the
calculated reach for that same number of an-
nouncements. In order to calculate impressions,
we need only remember that each randomly placed
annoucement delivers, on average, the same number
of impressions and that number is equal to the
average quarter-hour audience for the daypart.

For our sample station with a Monday-Friday
6-10A daypart cume of 58,400 and an AQH of
9,500, we can set up a reach and frequency table,
shown in Table 11.2. The column headings ap-
pearing in that Table are defined below.

Definitions for Table 11.2 Column Headings

Total Cume Reached: generated via a probability table
like that set up in Table 11.1.

Gross Impressions: the number of impressions made by a
single announcement multiplied by the number of announce-
ments scheduled. The number of impressions generated by
a single announcement is equal to the average quarter-hour
persons estimate for the daypart in which the announce-
ments have been placed.

Frequency: the average number of times each listener
hears an announcement; it is the result of dividing the
impressions made by the announcements by the number of
people the announcements reached. Note that the maximum
frequency that can be achieved is equal to the average
TSL for the daypart.

Table 11.2
Frequency Calculations
for a Varying Number of Announcements

Based on the Reach Calculations from Table 11.1

# of Announcements	Total Cume Reached	Gross Impressions	Average Frequency
1	9,500	9,500	1.0
2	17,500	19,000	1.1
3	24,300	28,500	1.2
4	30,100	38,000	1.3
5	34,900	47,500	1.4
6	39,000	57,000	1.5
7	42,400	66,500	1.6
8	45,200	76,000	1.7
9	47,600	85,500	1.8
10	49,600	95,000	1.9
.	.	.	.
15	55,300	142,500	2.6
.	.	.	.
20	57,400	190,000	3.3
.	.	.	.
68	58,400	646,000	11.1
.	.	.	.
80	58,400	760,000	13.0

Examination of Table 11.2 will make some things about the relationship between reach and frequency become clear. As each new announcement is added to the schedule, fewer and fewer new listeners are added to the reach. However, what does happen is that the cume begins to hear the announcement more and more often. Notice that the difference between the reach for 20 and 68 announcements is only 1000 persons, but the frequency with which the announcements are heard has more than tripled.

One more basic concept to be understood is the relationship between TSL, the number of announcements, and the percentage of the daypart cume that is reached. The sample station in Table 11.1, with an average TSL of 13 quarter-hours in the daypart, requires the placement of 5 announcements to reach about 60% of the daypart cume (nearly 35,000 different listeners). If the stations' average TSL were longer, then it would require fewer announcements to reach the same percent of the cume; if the station's average TSL were shorter, it would require more announcements to reach 60% of the daypart cume.

The product of the average TSL of 13 and the number of annoucements of 5 is 65. Any two factors of 65, for any station, will yield a reach of approximately 60% of the daypart cume, no matter what the size of the cume is. For a shorter average TSL of 11 quarter-hours, then, 6 announcements would be required to tap about 60% of the cume. For a longer average TSL of 17 quarter-hours, only 4 announcements would be required to impact about 60% of the daypart cume.

We noted above, when developing the probability table for the reach of varying numbers of announcements, that we had to assume that every listener listened for the same number of quarter-hours, ie., that the average TSL was applicable for all listeners. Intuitively, though, we know that this is not true; that radio listeners during a daypart may tune in for as little as a single quarter-hour or for as long as the entire daypart, that there is really no such thing as an "average listener."

Westinghouse, many years ago, recognized this and developed an improved methodology for determining the reach of any given schedule of announcements. Based on a detailed study of radio listening in the New York market, further tested by studies of listening behavior in the seven Group W markets, the researchers at Westinghouse refined the reach probability calculations

by dividing a station's cume into quintiles of listening groups, from the heaviest listeners to the lightest listeners. The quintiles of listening were developed for both the Monday-Sunday 6AM-Midnight daypart, as well as the four major Monday-Friday dayparts.

In Chapters 8 and 9 we have referenced the expected distribution of time spent listening to radio stations by quintile segment for Monday-Sunday 6AM-Midnight. A review of the actual distributions for public radio stations shown in Table 9.4 will serve to reinforce the continued applicability of the results of the Westinghouse study of radio listening for radio stations of all types.

Not covered in previous Chapters is the expected distribution of quarter-hours of listening during the major Monday-Friday dayparts. Those distribution percents, as well as a repeat of the expected percents for Monday-Sunday 6AM-Midnight, are shown in Table 11.3.

Table 11.3
Expected Distribution of Listening to a Station

	Quarter-Hour Contribution to Station Listening	
	Mon-Sun 6AM-Mid	Mon-Fri Major Dayparts
1st Quintile	60%	52%
2nd Quintile	21%	23%
3rd Quintile	11%	13%
4th Quintile	6%	7%
5th Quintile	2%	4%

Westinghouse then worked out probability tables for each listening group and based on those results, developed a slide rule for calculating the percentage of a station's cume that would be reached by any number of announcements.

The Westinghouse slide rule is an easy-to-use model for estimating the reach (and therefore frequency) of a schedule of randomly placed announcements, and is certainly better than any probability model that assumes that all listeners have the same TSL.[1]   The accuracy of the model will vary if your station's actual distribution of listening varies from the normalized distribution. If you ever require knowing the actual delivery of a schedule of announcements (as some advertisers do when evaluating station efficiency via post-buy analyses), the only way to retrieve the information is through an Arbitron AID run, for which you specify the exact quarter-hours that the announcements were broadcast.

The principles behind "Reach and Frequency" have implications for any on-air activity. A fairly obvious application is for the placement of pledge breaks during fundraising campaigns. Understanding the concepts of reach and frequency will help insure that your campaigns are reaching the desired percent of the cume with an appropriate frequency. Take into account the varying lengths of time spent listening to the station by daypart, and plan your pledge campaigns with that in mind. For dayparts where average TSL is short, more pledge breaks will be required to reach a certain percent of the cume.

Always remember that the only way to insure reaching all of your listeners, at least once, is to

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[1]For stations that are interested, the slide rule as well as an explanatory pamphlet called "Radio's New Math", are available directly from Westinghouse for $16.00 by calling Jim Aberle at (212) 307-3214.

run an announcement during every quarter-hour.
This has implications for planning programming
strategies to promote flow to another day or
daypart. One promotional announcement will only
reach a small percent of your listeners, only
once. Even two announcements will probably
have limited impact. You can estimate the impact
of varying numbers of announcements by applica-
tion of the principles of Reach and Frequency.
Once you know the probable impact of what you
implement, you have a measure of the number of
listeners that heard the announcements (and how
many times), against which you can compare results.

Chapter Twelve

Audience Estimates from a Development Viewpoint   —

In general, an underwriter of any portion of a
station's on-air time is making an investment in
that station. Even if the source of the under-
writing dollars are philanthropic funds, the under-
writer will expect some return on the investment.
In radio, that return is normally measured in
terms of audience; the underwriter needs to make
an "impression" on an audience. The type of
audience (by sex/age, education level, income
level) that is required may be different for each
potential underwriter. It is important that you
determine what the needs of a potential under-
writer are, so that you can show that underwriter
how providing funding to your station, can help
the underwriter achieve its goals.

Selective Use of the Data

There's no sense in promoting your station's
programming weaknesses. You will need to deter-
mine when your station has the most to offer a
potential underwriter. If time spent listening to
the station is low, then talk about the Cume for
the station. If the cume persons estimate is
small, maybe the Cume Ratings for certain demo-
graphics and/or geographies will show the station
in a better light.

Emphasize your strong reports, and downplay

using those that are not as strong. If your sta-
tion has been on a downward slide in recent
surveys, then averaging the survey results over
the past year, or year and-a-half, to show poten-
tial delivery, will help to "hide" some of the
lower estimates, as well as cushion some of the
normal fluctuations that will occur in audience
estimates from book to book. Consider setting
your underwriting credit rates based on average
survey estimates that can be adjusted annually or
semi-annually.

Using a rolling average concept should not prevent
you from promoting exceptionally good books
when they occur. If you've been using a multi-
survey average estimates, let the underwriters
know when listening to the station appears to be
up. You might even position it as a "bonus" to
the underwriter, before you adjust your rates to
compensate for the upward movement.

If your station shows exceptional delivery in one
quarter of the year, like Winter, and you are
attempting to pitch an underwriter on some pro-
gramming that will be carried during the Winter
quarter, you can cite last Winter's estimates, even
if the Spring and Summer estimates are down.
Since you are not asking for support of the Spring
and Summer programming, then it's not necessary
that you utilize those estimates.

Stations that have not developed an audience yet
may want to use some of the national estimates
on public radio use to show the audience potential
for public radio, particularly those that highlight
quality, rather than quantity, of audience.

Making Small Numbers Bigger

The largest cume estimate that you have is Persons
12+ in the TSA for Monday-Sunday 24 Hours.
Some stations that purchase multiple markets can
even adjust upward their TSA persons estimates to

include listeners outside of the home market area.

These 12+ numbers are only gross measures of
station penetration. Few stations, if any, are
programming to a 12+ audience. Radio is more
targeted. Stations, successful ones, attempt to
reach and serve only subsets of the market popu-
lation. Target audiences can be defined with a
variety of specificity.

>   TSA Adults 18+
>   Metro Adults 18-49
>   Metro Men 35-49
>   Metro Men 35-44 in High Education Zip Codes

Each of the above "targets" is a subset of the
prior definition. To the extent that you can
refine the audience for your station, either by
analyzing existing audience data, processing cus-
tomized geographic and demographic data, or by
supposition from the station's programming or
membership files, you will find that the station
achieves a larger and larger penetration (Rating)
of the defined population. While the process of
focusing in on a subset of the total audience
reduces the gross number of listeners that the
station reaches, the relative percentage, or the
rating, will increase.

An underwriter may not care that you reach
180,000 (or 3%) of the Adults 18+ in the TSA, but
if you reach 16% of Metro Men 35-44 in High
Education Zip Codes, this may be exactly what
the potential underwriter needs.

Compare your Average Quarter-Hour estimates to
Radio use in non-Prime Times. It is quite possible
that you will achieve your highest penetration of
radio users during times when your audience is
not necessarily large. Citing your share estimate
for time periods when radio is not heavily used
will help to make small AQH estimates look bigger.

The Average Quarter-Hour Persons estimate, espe-
cially for broad dayparts, is the smallest persons
estimate that you have.   Convert AQH Persons to
Gross Impressions.   If you're pitching an under-
writing package that includes fifteen underwriting
credits per week, let the underwriter know how
many impressions per week those credits will
make.   If you are also examining data for a highly
targeted demographic, and therefore have a very
small persons estimate even when converted to
impressions, convert the impressions to Gross
Rating Points.   Because GRP's are relative to
population size, they can look big just as Cume
Ratings can.

Instead of average Time Spent Listening, you will
want to cite the total hours or quarter-hours of
listening for the cume.   Either multiply the cume
estimate by average TSL, or multiply the AQH
persons estimate by the number of quarter-hours
that you are on the air during the daypart to
generate a gross count of time spent with a sta-
tion during an average week.   A cume estimate of
50,000 persons with an average TSL of 5.5 hours
per week equates to 275,000 hours of listening in
a week.   Multiply that weekly estimate by four
and you derive 1,100,000 total hours of listening
to your station in a month.   Since an Arbitron
survey period is an average of 12 weeks, you can
multiply the month estimate of 1.1 million by
three to compute 3.3 million hours of listening
across three months.   This 3.3 million hours is
the equal of 13.2 million quarter-hours of listening,
or potential impressions, each quarter.

To really stretch a point, you could multiply the
weekly hours of listening total by 52 to come up
with a grand total for the year, but that is taking
the estimates farther than they actually measure.
However, if your market is measured all four
quarters of the year, then a yearly grand total of
listening is derivable by computing the quarterly
total for each survey period and summing the
results.

Turning Negatives Into Positives

One of the main programming negatives in a
station's audience data is an estimate that indi-
cates lack of audience flow from one daypart to
the next or from one weekpart to another. Lack
of flow to a programmer, though, is exclusive
audience from a development standpoint.

Suppose that 30% of your station's Total Week
audience is exclusive to the weekends. You've
successfully encouraged an underwriter to provide
funds for the station's midday programming. At
some point, you can let the underwriter know
that just underwriting that midday audience is not
capturing the full audience for the station. To
reach more of your listeners, the underwriter
should also fund some Saturday or Sunday pro-
gramming. Locate those dayparts and weekparts,
when underwriting time is available, that a current
underwriter could use to supplement the current
schedule in order to maximize the potential for
reaching more of your audience.

Audience estimates, especially the data available
in the Programmer's Package, let you know with
what stations you are most likely sharing. A
programmer may worry some about the top stations
in the market not appearing on the Top 10 sharing
list, since it indicates, a lack of overall appeal to
the mainstream of the market. A development
person can use this information, once again, to
highlight exclusivity. Advertisers on those top-
ranked stations are paying premium rates and
missing part of the market, your listeners. Look-
ing at Figure 9.8, a sample page from a Program-
mer's Package, since the tenth ranked station on
the Top 10 shared list shares 9% of the sample
station's audience, then you know that stations in
the market report not on that list share something
less than 9% of the sample station's audience. At
least 91% of that audience is not being reached
by advertisers on those other stations.

A programmer may also worry about too high a

percent of sharing with another station. Sharing percents represent quarter-hours of listening by the cume that are being lost to the competition. If your station shares 40% of its audience with another, it means first of all, that the advertiser on that other station is NOT reaching 60% of your cume. If the advertiser, as an underwriter, funds portions of your programming, then the advertiser is adding reach that had been missing without your audience. In addition, the under-writer is adding all-important frequency, because they are reaching some of the same listeners again, even if those listeners are tuning to two separate stations. This may be particularly valu-able to an underwriter (or advertiser) who is doing an "image" campaign, or any promoter who is after both high reach and frequency.

When a station's average time spent listening is short, the AQH persons estimates will be low, and even Gross Impressions may not be very impres-sive. The development person can still make use of the estimates that result in this very negative programming view, by computing station reach for more than just the average week.

Multi-Week Cumes

The classic example of turning a programmer's negative into a development positive is available when computing multi-week cumes. The station cume for an "average week" will never include all of the station's listeners. In general, the shorter the average amount of time spent listening to a station by the cume, the more likely it is that the cume increases across weeks.

Recall that Arbitron (and Birch) report "average week" estimates. Neither company makes any attempt to determine listening beyond that which occurred during a seven-day period. But, adver-tising schedules are generally placed for multiple weeks, not a single week. Therefore, advertisers

are interested in learning the potential reach of a
full schedule of announcements that includes
several weeks.   Models exist for developing
multi-week cume estimates.   One that may be of
particular interest is the model that Arbitron
developed.

Arbitron performed a research study where re-
spondents actually kept diaries of radio listening
for two and/or four weeks.   Based on this study,
Arbitron was able to note the patterns that drove
a station's rising cume estimate when more than
one survey week was involved.   Clearly, the higher
a station's audience turnover ratio (ie., the shorter
the average time spent listening to the station),
the more likely that the cume would build as
listeners reported more weeks of listening.   The
end result of the study was a "Multi-Week Cume
Rule", a product that enables users to estimate
station reach across two, three, or four weeks.[1]

To illustrate the way that the cume estimate is
modeled to grow across weeks, let's assume that
several different stations have the same size
Monday-Friday 6A-10A average week cume esti-
mate: 75,000 persons.   However, each station has
a different size Average Quarter-Hour Persons
estimate, because the time spent listening to each
of the stations is different.   The Average TSL for
each station is shown in Table 12.1, along with
the audience Turnover Ratio (Cume divided by
AQH) that must be computed to use the Rule.
Once Turnover has been computed, the Rule pro-
vides the multiple to apply to the average week
cume estimate to arrive at a two, three or four
week cume estimate.

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[1]For stations that are interested, Arbitron's
"Multi-Week Cume Rule" is available through the
RRC.

Table 12.1
Two, Three, and Four Week Cume Projections
for Varying AQH Persons Estimates
Monday-Friday 6A-10A
Constant Cume Persons Estimate = 75,000

	AQH (00)	Average TSL in Hours	Turnover Ratio	2 Week Cume	3 Week Cume	4 Week Cume
WAAA	190	5.1	4	938	1065	1170
WBBB	125	3.3	6	960	1103	1223
WCCC	75	2.0	10	990	1155	1290
WDDD	50	1.3	15	1013	1200	1358
WEEE	34	.9	22	1058	1268	1440

WAAA's programming appeals strongly to its lis-
teners who stay tuned, on average, for more than
5 hours per week during the Monday-Friday morn-
ing daypart. Note, though, that of the five sta-
tions in the Table, WAAA's cume across multiple
weeks is the smallest. The largest cume estimates
are reported for WEEE, the station with the
shortest time spent listening, who across four
weeks nearly doubles its average week cume esti-
mate.

In Table 12.1, WEEE's potential reach really does
exceed that of WAAA. The reach can only be
achieved, though, by scheduling a greater number
of announcements. Essentially, four times the
number of announcements are required on WEEE
to reach not quite twice the reach offered by
WAAA. However, this need not stop WEEE from
computing and citing the multi-week reach esti-
mates. The computation does help a small AQH
audience, due to a short time spent listening,
convert to a large cume persons estimate. The
persons estimate can then be converted to ratings

to show penetration levels.

Across weeks, a station's Average Quarter-Hour estimate does not change. WAAA, with its AQH estimate of 19,000 persons, will always deliver more impressions, on average, than WEEE. Placing announcements across weeks on WAAA is more likely to increase the frequency with which they are heard rather than the total reach. It will always take more announcements on WEEE to reach a sizable percent of the cume at least once. Another way to say it is that it will take more announcements on WEEE than on WAAA to reach the same number of listeners; it is more difficult to reach WEEE's audience than WAAA's, with any type of on-air promotion or announcement. Any announcement on WAAA will always, on average, generate more than five times the number of impressions of an announcement on WEEE.

Because the cume grows across weeks, and the AQH estimate remains the same, average time spent listening by the cume will decline. No matter what the size of the cume across multiple weeks, the number of impressions generated across a month will be the same as those derivable from the average week AQH estimate. As those number of impressions are spread across a larger cume base, the average time spent listening by this larger cume must decline. The concepts behind Reach and Frequency, discussed in Chapter 11, can be applied to cume estimates that are based on multiple weeks. (Remember, though, to take into account the expanded number of quarter-hours across which announcements can be rotated.)

In our example, WEEE's short average TSL, re-sulting in a small AQH persons estimate, no matter what techniques we use to make it look bigger, will always be a negative, that can only be par-tially hidden behind large multi-week cume esti-mates.

Appendices

APPENDIX A

Sample Error

All surveys are subject to error because only a sample of the population is being measured rather than the whole population, as in a census. Therefore, the results of surveys are called estimates. At times, it is important for users of the estimates to know just how much "sample error" may have occurred, and how reliable the sample is. With this knowledge, stations utilizing audience estimates can make judgments on whether or not a change in the reported estimates, up or down, was a "real" change or simply due to sampling error.

Stations of varying audience sizes will have different sampling errors around their estimates. Cume estimates are subject to different sampling error than average quarter-hour estimates, and the error surrounding an average quarter-hour estimate is dependent upon the number of quarter-hours in the reported daypart. Other variables in determining sampling error are the number of in-tab diaries utilized in projecting the estimate, and the amount of weighting that had to occur to bring the sample distribution in line with the distribution of the population being measured. Currently, Arbitron weights its sample to reflect: sixteen sex-age groupings, eg., Boy Teens, Males 18-24, etc.; geographic strata, when more than one county unit is included in the survey area; and, in many markets, the ethnic characteristics of the Metro sample, ie., Black, Hispanic or both.

In the local market report, Arbitron has provided
the means for stations to measure the amount of
sampling error associated with each of the pub-
lished estimates, in addition to computing the
Effective Sample Base for each of those estimates.
Two tables in the back of the book, labeled "Radio
Reliability - Table A and Table B", are provided
to perform the calculations.   Table A is the same
in all of Arbitron's market reports.   The Table
provides the numerator value,   for ratings of
different magnitude, in the standard error calcula-
tion.   As the size of the rating increases up to
50.0%, the numerator value increases, indicating in
general that the larger the rating the more reli-
able the estimate.[1]

Because each survey uses a different sample, the
overall reliability of the sample, and consequently
the size of the error surrounding any of the
reported audience estimates, is different from
survey to survey.   Table B in the back of the
report is specific to the market and survey.
Utilizing only the data supplied on Table B, report
users can estimate the reliability of the sample
upon which the audience estimates are based.
The Effective Sample Base (ESB) for any of the
published estimates can be determined by simply
squaring the appropriate Table B value.   The ESB
is the estimated size of the simple random sample
size (one where all diaries have been returned in
exact proportion to the population and so have an

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[1]Note, though, that when the rating exceeds
50%, the size of the numerator in the standard
error calculation, begins to decline.   A rating of
20% indicates that 20% of the population listen
AND 80% do not.   The numerator value of 40.00 is
identical to the numerator value for an 80% rating,
when 20% of the population do not listen, but 80%
do.   The absolute value of the error surrounding
both a 20% and an 80% estimate is identical,
although the percentage deviations of the error
surrounding the two rating percents are obviously
different.

equal value) that would be required to provide the
same degree of reliability as the sample upon
which the estimates are based.

In placing its sample, Arbitron established an ESB
goal for each Market's Metro and TSA (and ADI,
if applicable).   The Metro ESB goal is printed on
Page 3A.   By squaring the Table B value, for "All
Cume Estimates" for Total 12+, report users can
determine how close Arbitron came to that goal.[2]

The square of the Table B value allows comparison
of the relative reliability of reports for the same
market from different survey periods, as well as
different markets from the same survey period.
Utilization of the ESB to compare relative reli-
ability is a more accurate method than simply
using comparative intab sample sizes.

Examination of the Table B values for any market
report will show the following: the values for
Cume estimates are the smallest on the page (they
are the least reliable estimates); the values for
AQH estimates increase as the number of quarter-
hours in the daypart increases (the broader the
daypart, the more reliable the AQH estimate).

Normally, Table B values will be larger for the
Total Survey Area, than for the Metro Area,
(indicating that reliability of the TSA estimates is

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[2]Whether Arbitron only achieves 50% of its
goal, or whether it exceeds its goal should not be
of primary importance to a report user.   What is
important is the relationship of the various ESB's
for a given market across survey periods.   For
example, if, in the Spring'85 survey period, your
station took a tremendous drop in cume from the
previous Spring, AND the ESB for the Spring'85
survey period is much less than that for Spring'84,
then you have reason to believe that sampling
error MAY have had an impact on your audience
estimates.   The lower the ESB, the less reliable
the overall sample.

greater than the reliability of the Metro estimates)
although the increase in the Table B values will
be less than the increase in intab. Reliability
does not improve at the same rate as intab sample
size increases.

Computing the Standard Error

In order to compute the standard error around a
given estimate, the estimate must be expressed as
a rating. The rating allows the user to select a
"rating value" from Table A. Then a value from
Table B, that reflects the Geographic Base for the
estimate, the Demographic, the estimate type
(whether Average Quarter-Hour or Cume), and if
AQH, the appropriate daypart column, must be
selected and a simple division performed. The
Table A value divided by the Table B value is the
estimated Standard Error for the audience esti-
mate.

Let's assume the following example, that a station
knows its cume persons and ratings estimates for
Monday-Sunday 6AM-Midnight, as well as AQH
persons, but must compute an AQH rating for
Metro and TSA Persons 12+ and Men 25-49.

Station Estimates Mon-Sun 6A-Mid

	Persons	Rating
Metro 12+ AQH:	1,700	???
Metro 12+ Cume:	37,600	10.7
TSA 12+ AQH:	2,200	???
TSA 12+ Cume:	46,000	8.8
TSA Men 25-49 AQH:	800	???
TSA Men 25-49 Cume:	10,800	9.6

The first step is to determine the population base

for each of the average quarter-hour estimates.
Population estimates are listed on Page 3A of the
market report.   Persons 12+ population estimates
are explicitly displayed.   Population estimates for
Men 25-49 must be computed by summing the
population for each of the discrete age groups
that comprise the 25-49 target (25-34, 35-44 and
45-49).   Let's assume that the stations's market
report indicated the following universes:

Metro 12+ Population:	350,000
TSA 12+ Population:	525,000
TSA Men 25-49 Population:	112,900

To compute the AQH ratings, the station must
divide the AQH persons estimate by the appropriate
population estimate and express the result as a
percent.   The results of the ratings calculations
are included in the table below:

Station Estimates Mon-Sun 6A-Mid

	Persons	Rating
Metro 12+ AQH:	1,700	.5
Metro 12+ Cume:	37,600	10.7
TSA 12+ AQH:	2,200	.4
TSA 12+ Cume:	46,000	8.8
TSA Men 25-49 AQH:	800	.7
TSA Men 25-49 Cume:	10,800	9.6

Once the ratings estimate has been determined,
the numerator value for each estimate can be
pulled from Reliability Table A that appears on
Page v of each market report.   These values are
the same, no matter what the market or survey
period, and so are called Constant Values:

	Rating	Constant Value
Metro 12+ AQH:	.5	7.05
Metro 12+ Cume:	10.7	30.91
TSA 12+ AQH:	.4	6.31
TSA 12+ Cume:	8.8	28.33
TSA Men 25-49 AQH:	.7	8.34
TSA Men 25-49 Cume:	9.6	29.46

The denominator in the standard error equation is the Variable Value (because it is different in every market and survey) selected from Reliability Table B in the market report. The variable value for any Cume Estimate is selected from the first column. The variable values for Mon-Sun 6A-Midnight AQH estimates are listed in the last column. (When selecting the values, be careful to retrieve the value for the appropriate Geography, Demo and Estimate Type). Assume the station found the following variable values in the Reliability Table B:

	Rating	Constant Value	Variable Value
Metro 12+ AQH:	.5	7.05	48.12
Metro 12+ Cume:	10.7	30.91	20.31
TSA 12+ AQH:	.4	6.31	53.89
TSA 12+ Cume:	8.8	28.33	23.17
TSA Men 25-49 AQH:	.7	8.34	28.71
TSA Men 25-49 Cume:	9.6	29.46	12.10

The standard error surrounding each rating estimate is the result of dividing the Constant Value for the rating by the Variable Value for the Geography, Demo and Estimate Type.

	Rating	Constant Value	Variable Value	Standard Error
Metro 12+ AQH:	.5	7.05	48.12	.147
Metro 12+ Cume:	10.7	30.91	20.31	1.522
TSA 12+ AQH:	.4	6.31	53.89	.117
TSA 12+ Cume:	8.8	28.33	23.17	1.223
TSA Men 25-49 AQH:	.7	8.34	28.71	.290
TSA Men 25-49 Cume:	9.6	29.46	12.10	2.435

The Standard Errors listed above are determined
at the 68% confidence level. That generally means
that in two out of three random samples, the
rating derived from the original sample would
have been obtained again, plus or minus the
standard error.

While the 68% confidence level is normally consid-
ered the acceptable confidence level for an esti-
mate, finer or less refined confidence levels can
be obtained by multiplying the derived standard
error by the Z-value associated with the desired
confidence level. The multiplier values are sup-
plied in the Market Report for the 90%, 95%, and
99% confidence levels. The net effect of increas-
ing the confidence level is to increase the size of
the standard error.

Once you know the standard error of the estimate,
you can compute the confidence interval, that is
the upper and lower boundaries of the estimate.
Simply take the reported rating and add the
standard error to obtain the upper confidence
limit, and subtract the standard error to obtain
the lower confidence limit.

Determination of the lower and upper limits for
each of the audience ratings is shown on the next
page.

	Rating	Standard Error	Lower Limit	Upper Limit
Metro 12+ AQH:	.5	.147	.4	.6
Metro 12+ Cume:	10.7	1.522	9.2	12.2
TSA 12+ AQH:	.4	.117	.3	.5
TSA 12+ Cume:	8.8	1.223	7.6	10.0
TSA Men 25-49 AQH:	.7	.290	.4	1.0
TSA Men 25-49 Cume:	9.6	2.435	7.2	12.0

Knowing the confidence interval allows the report user to be able to say with reasonable confidence (ie., two times out of three), a survey of the population would have resulted in a rating that fell between the upper and lower limits. For the 10.7 cume rating, one can be 68% confident that the estimate would always fall between 9.2 and 12.2, even if a full census of the population is taken.

Computing the Probability that the Direction of an Audience Change is Real

Let's suppose now that the station actually achieved a Metro 12+ Cume Rating of 12.2 in the next Spring survey period. From the last Spring survey period, we determined that a 12.2 rating was the upper confidence limit of the reported 10.7 rating. Must the station assume that the new report shows "no change" because the reported estimate falls within the range allowable in the old report? There is a way to determine statistically the chances of the ratings jump being real.

In order to determine that a change upward or downward is really a change, and not just sample bounce, one must take into account that two reports are based on different samples. The estimates from two different reports will have

different standard errors around them.   If the
confidence intervals for the two reported estimates
do not overlap, then one knows that the report-
to-report change was statistically significant.
This is a restatement of the fact that if a big
change occurred, it is more likely to be a meas-
urement of real change, than if a small change
had occurred (given equally reliable samples).

Large changes though are rare -- so most changes
are statistically insignificant.   However, one can
determine the chances of a statistically insignifi-
cant change being real by examining the standard
error surrounding the difference between the two
estimates.

Returning to the station that achieved a 10.7
Metro 12+ Cume Rating, Monday-Sunday 6AM-Mid-
night in one Spring survey period followed by a
12.2 rating in the next Spring survey period.   We
want to determine if this is really good news or
"no news", ie., that the upward movement of the
rating was simply due to sample fluctuation.

We already know that the standard error sur-
rounding the 10.7 Rating is 1.522.   We must deter-
mine the standard error surrounding the new
cume rating of 12.2, after looking up the Table B
value from the new market report:

Table A value for 12.2 rating:	32.73
Table B value for new 12+ Metro Cume rating:	22.54
Standard Error (Table A value divided by Table B value):	1.452

Note that if we compute the lower confidence
limit of the 12.2 rating by subtracting the 1.452
standard error, we end up with a cume rating of
10.7 -- identical to the previous report.   There-
fore, we know that the report-to-report change
was not statistically significant.   But we can still
test the change to see the likelihood that the

difference was more than just sample bounce.

To do this we must compute the "standard error
of the difference" by determining the square root
of the sum of the squares of the two standard
errors.

```
[First Standard Error]²      [1.5222]²  =  2.317093
[Second Standard Error]²     [1.452 ]²  =  2.108304
Sum of the Squares                      =  4.425397
Square Root of the Sum of the Squares   =  2.103663
```

Then we "standardize the difference" by dividing
the difference in the two ratings by the standard
error of the difference.

```
Rating Two (12.2) less Rating One (10.7)     =  1.5
Divided by Standard Error of Difference      +  2.103663
Equals                                       =  .713042
Rounded to Standardized Difference           =  .7
```

The larger the standardized difference, the more
likely that the change between two reports is a
"real change" and is not due simply to statistical
fluctuation.   That can be determined from a Table
of Probability[3], (Table A.1), that shows the odds
of a Standardized Difference (up or down) indi-
cating that the direction of the change was real.

Note that a standardized difference of .7 translates
to a probability of .758, or about 3 to 1 odds that
the survey-to-survey rating change was really an
upward change.   (Note though, that there is also
about a 25% probability that a real change did
not occur, and that the upward direction of the

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[3]Arbitron Replication II: A Study of the
Reliability of Radio Ratings, by Michael
Occhiogrosso and Martin Frankel, Copyright 1982
by the Arbitron Ratings Company, Page 79.

Table A.1
Probability and Odds That the Direction of the Change
Between Two Survey Estimates is Real

Absolute Value of Standardized Difference	Probability	Odds
3.0	.999	739.8 to 1
2.9	.998	534.9 to 1
2.8	.997	390.4 to 1
2.7	.997	287.4 to 1
2.6	.995	213.5 to 1
2.5	.994	160.0 to 1
2.4	.992	121.0 to 1
2.3	.989	92.2 to 1
2.2	.986	70.9 to 1
2.1	.982	55.0 to 1
2.0	.977	43.0 to 1
1.9	.971	33.8 to 1
1.8	.964	26.8 to 1
1.7	.955	21.4 to 1
1.6	.945	17.2 to 1
1.5	.933	14.0 to 1
1.4	.919	11.4 to 1
1.3	.903	9.3 to 1
1.2	.885	7.7 to 1
1.1	.864	6.4 to 1
1.0	.841	5.3 to 1
.9	.816	4.4 to 1
.8	.788	3.7 to 1
.7	.758	3.1 to 1
.6	.726	2.6 to 1
.5	.691	2.2 to 1
.4	.655	1.9 to 1
.3	.618	1.6 to 1
.2	.579	1.4 to 1
.1	.540	1.2 to 1

If Standardized Difference is 0.0, no change in report ratings were noted; therefore, the odds of "actual" increase versus decrease are 1:1.

rating change was simply due to statistical error.)
Therefore, the sample station whose Cume Rating
increased from 10.7 to 12.2 knows that there is
75% likelihood that the ratings increase was real,
ie., not due to sample bounce.

Some Generalizations

The larger the sample size upon which the repor-
ted estimate is based, the more reliable the esti-
mate will be.   The estimates for a market with a
sample size of 2000 are likely to be more reliable
than for a market with a sample size of 1000 (but
not twice as reliable).

The more closely that the distribution of the
sample resembles the actual characteristics of the
population distribution, the more reliable the
estimates will be.

A Persons 12+ rating is more reliable than the
same size rating for Men 25-49 for the same
market and survey.

An Average Quarter Hour rating is more reliable
than the same size Cume rating.   A Cume estimate
is a measure of a single occurrence of listening,
while Average Quarter Hour estimates measure
multiple occurrences.   The greater the number of
quarter hours in a daypart, the higher the reli-
ability of the Average Quarter Hour estimates.

The larger the rating estimate, the more reliable
that estimate will be, ie., the percentage deviation
around the estimate decreases as the size of the
estimate increases.

Some Caveats

In supplying the tables to measure Standard Error,
Arbitron only takes into account statistical error.

Human error, either on the part of the diarykeeper
or Arbitron can also affect the data, as can addi-
tional limitations such as an incomplete universe
(non-telephone households are excluded) or nonre-
sponse by the selected sample (if nonresponders
listen differently than respondents).   These addi-
tional limitations are carefully worded on the
back pages of the market report.

Determining the probability of statistically valid
change from report to report does not take into
account the fact that surveys are measurements
of a specific point in time.   If you change the
point in time, other factors besides statistical
validity should be taken into consideration when
determining if change is real or not.

The RRC always cautions audience estimate users
to examine data over time -- to note the trends
of the estimates, being careful of seasonal differ-
ences.   The more points in time across which
audience estimates can be trended, the better.

*Computing Standard Error without the Reliability
Tables*

For those stations utilizing audience estimates for
which Arbitron's Reliability Tables are not avail-
able (eg., Primary Signal Area Reports), a simple
mathematical formula for estimating the sample
error associated with each audience estimate for a
"market" and survey period exists.

The standard error around the audience estimate,
at the 68% confidence level, is the result of ex-
tracting the square root of the rating multiplied
by 100 less the rating divided by the sample size
for the geography and demo.   Given a Cume Rating
of 10.7 and a sample size of 1352, the computation
for the standard error around the 10.7 estimate is
shown on the next page.

The standard error would be the square root of:

$$10.7 * (100 - 10.7) \div 1352 = .7067$$

The square root of the result of the above compu-
tation is .8407, the standard error for the 10.7
Cume Rating. Given this computation for the
standard error, confidence levels for the estimates,
and estimates of statistical validity of change can
be derived exactly as described above.

The problems with this formula are several. It
assumes a simple random sample, that diaries were
returned in correct proportion to the population,
that each diary received an equal weight. Arbitron
does not even necessarily place sample in direct
proportion to the population (Metro versus Non-
Metro). It does not take into account, the vari-
ance in reliability associated with different esti-
mate types or estimates from different size day-
parts (Monday-Friday 6A-10A versus Saturday 6A-
10A).

While the formula may be a somewhat simplistic
measure of the standard error, for some report
users, it is the only measure available.

Answers to the Chapter Eight Quiz

1. Cume increase of 8% and an AQH increase of 8%.

Like the 7PM-Midnight sample station's estimates, this type of change indicates that average TSL remained the same. The cume increased, therefore AQH persons increased. However, since we tend to believe that new cume is lighter listening cume, at first, then this type of change also indicates that the established cume increased slightly their time spent listening to the station, at the same time that the station was adding new listeners.

2. Cume increase of 8% and an AQH increase of 12%.

A cume increase accompanied by an even larger AQH increase is indicative of a growing average TSL. In addition to adding new (and therefore, lighter) listeners to the cume base, the station has also increased time spent listening by the established cume, to a significant extent.

3. Cume increase of 10% and no change in AQH.

Average Time Spent Listening by the cume has declined. While this would not necessarily be a surprise, if new listeners will at first listen for

shorter periods of time to a station, the fact that
AQH persons did not increase at all means that the
additional quarter-hours of listening contributed
by the new cume compensated for lost quarter-
hours of listening by the old cume. The average
TSL among the established listeners declined.

4. No change in cume and an AQH increase of 10%.

All of the increase in quarter-hours of listening
to the station is directly attributable to increased
length of listening by the established listeners.
Or, new light listeners were added to the cume
base, old light listeners were removed, and old
heavier listeners tuned in the station longer.

5. No change in cume and an AQH decline of 10%.

All of the decline in quarter-hours of listening to
the station is directly attributable to a decreased
length of listening by the established listeners.
Or, new light listeners were added to the cume,
old light listeners were removed, and old heavier
listeners became lighter listeners (who are there-
fore candidates for leaving the cume by the time
the next survey results are available.)

6. No change in cume and no change in AQH.

While on the surface, this type of survey-to-survey
comparison may just appear boring, there could
have been any number of changeovers in the
audience composition. For example, heavy listeners
could have become even heavier, while light lis-
teners became even lighter. Estimates showing
"no change", rather than indicating lack of change,
are much more likely to indicate that the changes
that did occur balanced out in the end result.

7. Cume decline of 12% with an AQH decline of 8%.

Because the AQH estimate did not drop as much
as the cume estimate, average time spent listening
by the remaining cume increased.   Since we tend
to believe that the lightest listeners leave the
cume first, the time spent listening by the already
heavier cume increased to partially compensate
for some of the cume loss.

8. Cume decline of 8% with an AQH decline of 12%.

Not only did the cume decline, but average time
spent listening by the remaining cume also de-
clined.   The lightest listeners among the estab-
lished cume have left the station.   In order for
the AQH estimate to drop more than the cume
estimate, the average TSL by the remaining cume
must have dropped significantly, creating a new
level of light listeners, who because they are now
less reliant on the station, are prime candidates
for leaving the cume soon.

9. Cume decline of 8% and no change in AQH.

As in the 3P-7P changes for our sample station,
the average TSL must have increased.   The sug-
gested change in behavior is a substantial increase
in listening by the established users, accompanied
by the loss of lighter listeners.   This type of
change suggests a narrowing of appeal.   The
station does not evidence the ability to attract a
new sampling of listeners; there may be something
in the programming that is designed to only appeal
to those who are already listening.

Think
Audience

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