the week. In addition, many critics contend that diaries are used to “vote” for or against specific shows and that actual viewing is not recorded. Arbitron’s PPM is criticized for potentially reducing the size of some radio station’s audience because the device is not universally accepted by all types of respon-dents. And, finally, critics of data collection by telephone (although not currently used by any national company) say that the method favors responses by younger people, who are more willing to talk on the telephone; older respondents generally do not have the patience to answer the questions about their viewing or listening habits.

One thing is certain: While the debate about the accuracy of the various audience ratings methods will continue, research com-panies, including Arbitron and Nielsen, will continue their pursuit of more valid and reli-able data collection procedures.

**Interpreting the Ratings**

Interpreting broadcast ratings and under-standing the terminology used can best be explained with an example. While this example uses television, the procedures are the same for radio ratings. Let’s assume that Nielsen has collected TV viewing informa-tion (see Table 14.1) for a specific daypart on “traditional” network television. (Only three networks are shown to simplify the



**Table 14.1** Hypothetical TV Viewing Data

**Network** **Households**

ABC 2,200

CBS 2,000

NBC 1,800

|  |  |
| --- | --- |
| Not watching | 4,000 |
|  |  |

Total 10,000

discussion. In reality, the list would include dozens of TV stations and networks.)

Recall that Nielsen’s NTI sample includes about 10,000 households in the United States, and the data collected from them are generalized to the total population of about 114.5 million television households. The first number to compute is the rating for each network.

**Rating.** An audience **rating** is the percent-age of people or households in a population with a television or radio tuned to a specific station, channel, or network. Thus, the rat-ing is expressed as the station or network’s audience divided by the total number of television households or people in the target population:

People or Housholds

Rating 5



Population

This formula is typical in mass media re-search. However, the numerator in the formula is actually People or Households Viewing TV / People Listening to Radio. For example, using the hypothetical data in Table 14.1, ABC’s rating is computed as

2,200

Rating 5 10,000 5 0.22 or 22% or 22

This indicates that approximately 22% of the sample of 10,000 households was tuned to ABC at the time of the survey. (Note that even though ratings and shares are percent-ages, when the data are reported, the deci-mal point and % symbol are eliminated.)

The combined ratings of all the net-works or stations during a specific time period (daypart) provide an estimate of the total number of *Homes Using Television* **(HUT)**. Since radio ratings deal with peoplerather than households, the term *Persons* *Using Radio* **(PUR)**is used. The HUT or

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PUR can be found either by adding together the households or persons using radio or television or by computing the total rating and multiplying it by the sample (or popu-lation when generalized). The total rating in the sample data in Table 14.1 is .60, which is computed as follows:

2,200

ABC 5 10,000 5 .22 or 22%

2,000

CBS 5 10,000 5 .20 or 20%

1,800

NBC 5 10,000 5 .18 or 18%

HUT 5 6,000 Total Rating 5 .60 or 60%

In other words, about 60% of all house-holds (HH) with television were tuned to one of the three networks at the time of the survey. As mentioned, the HUT can also be computed by multiplying the total rating by



the sample size: 0.60 3 10,000 5 6,000. The same formula is used to project to the popu-lation. The population HUT is computed as: 0.60 3 114.5 million 5 68,700,000.

TV stations, networks, and advertisers naturally wish to know the estimated number of households in the HUT tuned to specific channels. Ratings data from the sample of 10,000 households are used to provide a *rough* estimate of the households tuned to each net-work (or station), as shown in Table 14.2.

**Share.** An audience **share** is the percentageof the HUT or PUR that is tuned to a spe-cific station, channel, or network. It is deter-mined by dividing the number of households or persons tuned to a station or network by the number of households or persons using their sets:

Persons or Households



HUT or PUR

**Table 14.2** Household Estimates Using Ratings and Shares

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Network** | **Rating** |  | **Population** |  | **Rough Population HH Estimate** |
|  |  |  |  |  |  |  |  |  |  |
| ABC | 22.0 |  | 3 | 114,500,000 | 5 | 25,190,000 |  |
| CBS | 20.0 |  | 3 | 114,500,000 | 5 | 22,900,000 |  |
| NBC | 18.0 |  | 3 | 114,500,000 | 5 | 20,610,000 |  |
|  |  |  |  |  |  |  |  |  |  |
| *Total* | *60.0* |  |  |  |  | *68,700,000* |  |
|  |  |  |  |  |  |  |  |  |  |
| **Network** | **Share** |  | **HUT** |  | **Exact Population HH Estimate** |
|  |  |  |  |  |  |  |  |  |  |
| ABC | 36.7 |  | 3 | 68,700,000 | 5 | 25,212,900 |
| CBS | 33.3 |  | 3 | 68,700,000 | 5 | 22,877,100 |
| NBC | 30.0 |  | 3 | 68,700,000 | 5 | 20,610,000 |

*Total* *100* *68,700,000*

|  |  |
| --- | --- |
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From Table 14.1, the sample HUT is 6,000 2,200 1 2,000 1 1,800 , or 60% of 10,000. The audience share for ABC would be:

2,200

Share 5 6,000 5 0.367 or 36.7%

That is, of the households in the sample whose television sets were on at the time of the survey, 36.7% were tuned to ABC. (People may not have been watching the set but may have recorded that they did in a diary, or the People Meter recorded the information.) The shares for CBS and NBC are computed in the same man-ner: CBS Share 5 2,000/6,000, or 33.3%; NBC Share 5 1,800/6,000, or 30.0%.

Shares are also used to provide an *exact* estimate of households in the target popu-lation, computed by multiplying the share by the HUT or PUR. The rough and exact household estimates for each network are shown in Table 14.2.

Estimating the number of households tuned to specific channels and networks provides a broad indication of audience size. However, broadcasters, advertisers, and other people who use TV ratings are also interested in the estimated of the number of people tuned to a channel or network. Most references in books and on the Internet say that to estimate the number of people tuned to a channel or network, Nielsen multiplies the number of estimated households by the average household size (average num-ber of people per household) in the United States—3, 4, or 5. Actually, both items are incorrect. Nielsen does not multiply the number of households by a constant number such as 3, 4, or 5, or any other number. In addition, references using 3, 4, or 5 as the average number of people per household in the United States in 2009 are wrong. In

2009, the average is 2.5 people per house-hold, although the number does vary by region of the country.

If Nielsen does not multiply household estimates by the average number of people per household (constant) to estimate the number of viewers, how does the company produce the estimates? To explain the procedure, we will use actual Nielsen data for the week of March 9, 2009, shown in Table 14.3—the top 10 programs for the week. Nielsen re-leases this information to the public because the data show only total household estimates and total viewers over one year old (referred to as the 21 (2 plus) audience). Broadcasters do not sell, and advertisers do not buy, advertising based on Household and 21 rat-ings and shares because the data are for the total audience, and there is no interest in this group. The interest is in specific demo-graphic targets, known as “demographics,” “demos,” “demo cells,” or simply “cells,” such as Females 25–34. Every TV program is designed for a specific demo (cell), and that is how advertising time is bought and sold—an advertiser purchases time on a pro-gram because the program attracts a specific audience the advertiser wants to reach. (See the special note on demos at the end of this chapter.)

Now refer to Table 14.3. The actual Nielsen data include everything but the col-umn titled Viewers per HH (VPHH). The authors calculated the data for this column. (Nielsen rarely includes the VPHH number in public information because there is no specific use for the number.) Looking at the VPHH column, the two often-stated “facts” about how Nielsen computes the number of viewers are immediately proved to be wrong—Nielsen does not use a constant for the average number of people per household, and the number is not 3, 4, or 5. So what is the source of the numbers in the Viewers per HH column?

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**Table 14.3** Nielsen Top 10 TV Programs

**Top 10 TV Programs for the week of March 9, 2009\***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | **Households** | **Viewers** | **Viewers** |
| **Rank** | **Program** | **Network** | **Rating** | **Estimate (000)** | **Estimate (000)** | **Per HH\*\*** |
|  |  |  |  |  |  |  |
| 1 | *American Idol-Tuesday* | FOX | 14.6 | 16,717 | 25,767 | 1.54 |
| 1 | *American Idol-Wednesday* | FOX | 14.6 | 16,717 | 25,547 | 1.53 |
| 3 | *Dancing with the Stars* | ABC | 14.1 | 16,145 | 22,829 | 1.41 |
| 4 | *CSI* | CBS | 10.3 | 11,794 | 17,132 | 1.45 |
| 5 | *Desperate Housewives* | ABC | 10.3 | 11,794 | 14,602 | 1.24 |
| 5 | *Grey’s Anatomy* | ABC | 9.1 | 10,420 | 13,642 | 1.31 |
| 7 | *CSI: Miami* | CBS | 9.0 | 10,305 | 14,215 | 1.38 |
| 7 | *The Mentalist* | CBS | 9.0 | 10,305 | 14,322 | 1.39 |
| 9 | *Criminal Minds* | CBS | 8.9 | 10,191 | 14,342 | 1.41 |
| 10 | *CSI: New York* | CBS | 8.6 | 9,847 | 13,633 | 1.38 |

\*Live 1 SD Viewing (Same Day Recorded)

\*\*Includes viewers over the age of two in household

To demonstrate that VPHH is not a constant number, we computed the num-bers in a simple way—we “backed into” the VPHH numbers. That is, we divided the number of estimated viewers by the number of estimated households. For example, the VPHH for *American Idol-Tuesday* is 1.54 (25,767/16,717 5 1.54).

As mentioned, Table 14.3 shows that the VPHH is different for each of the top 10 programs, and none is a constant or even 2.5, the 2009 average people per household in the United States. The reason each VPHH is different is that each program attracts a different audience. While some programs may be popular among a wide audience, others appeal to a smaller group of people. For example, the *American Idol* programs have the largest VPHH numbers, 1.54 and 1.53, because the program is designed for a

broad audience—males and females of all ages. On the other hand, *Desperate House-wives* has the lowest VPHH, 1.24, because itis designed for a smaller group of people— older viewers, and possibly more females than males, or vice versa.

In summary, Viewers per HH is not computed with a constant number. It is a weighted number calculated by Nielsen prior to a ratings period, and that number is mul-tiplied by the Households estimate to pro-duce the “Viewers Estimate (000)” shown in Table 14.3 (the data released to the public). The weighted number is calculated by us-ing several items including, but not limited to, the program’s target demographic, what time the program is aired, and historical viewing data from previous ratings periods. (Incidentally, notice that the two episodes of *American Idol* were tied for first place with

|  |  |
| --- | --- |
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a rating of 14.6. This is less than 50% of the rating the number one TV program received just a few years ago. The large number of choices on television has fragmented the television audience.)

One final point about audience ratings and shares is that while television uses both ratings and shares for decision making and advertising sales, radio uses only shares because the ratings are too small and offer little information.

**Cost Per Thousand.** Stations, networks, andadvertisers need to be able to assess the effi-ciency of advertising on radio and television so that they can determine which advertising buy is the most cost effective. One common way to express advertising efficiency is in **cost** **per thousand (CPM)**, or what it costs an ad-vertiser to reach 1,000 households or persons. The CPM provides no information about the effectiveness of a commercial message, only the dollar estimate of its reach. It is computed according to the following formula:

Cost of advertisement1 2 CPM 5 Audience size in thousands



Using the hypothetical television data from Table 14.1, assume that a single 30-second commercial on ABC costs $275,000. The CPM for the commercial is computed as

$275,0001 2

ABC CPM 5 25,190 000 5 $10.92

In other words, it costs an advertiser $10.92 to reach each 1,000 households on ABC for a specific program at a specific time period. If we assume that the advertis-ing costs were the same for CBS and NBC, the corresponding CPMs are: CBS 5 $12.00 and NBC 5 $13.34.

The CPM is used regularly when ad-vertisers buy commercial time. Advertisers

and stations or networks often negotiate advertising contracts using CPM figures; the advertiser might agree to pay $11.50 per thousand households. In some cases, no negotiation is involved—a station or net-work may simply offer a program to adver-tisers at a specified CPM, or an advertiser may offer to pay only a specific CPM.

The CPM is seldom the only criterion used in purchasing commercial time. Other information, such as audience demographics and the type of program on which the adver-tisement will be aired, is considered before a contract is signed. An advertiser may be willing to pay a higher CPM to a network or station that is reaching an audience that is more desirable for its product. Cost per thousand should be used as the sole pur-chasing criterion *only* when all else is equal: demographics, programming, advertising strategy, and so on.

**Related Ratings Concepts**

Ratings, shares, and other figures are com-puted for a variety of survey areas and are split into several demographic categories. For an additional fee, ratings companies also provide custom information such as ratings in specific zip codes. Although ratings and shares are important in audience research, a number of other computations can be per-formed with the data.

A **metro survey area (MSA)** corresponds to the Consolidated Metropolitan Statistical Areas (CMSA) for the country as defined by the U.S. Office of Management and Budget. The MSA generally includes the town, the county, or some other designated area clos-est to the station’s transmitter. The **desig-nated market area (DMA)**, another area forwhich ratings data are gathered, defines each television or radio market in exclusive terms. (At one time Arbitron used the term *Area* *of Dominant Influence,* or ADI, to describethe DMA but has since changed to Nielsen’s

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**A CLOSER LOOK**

**The Stability of Radio Ratings**

Everyone involved in radio has encountered samples of listeners, there are different sam-

situations where their radio station’s shares pling error percentages. Even if no program-

“bounce around” from one ratings book (or ming changes were made, radio broadcasters

period) to another. This is a common complaint must expect changes in their radio station’s

about Arbitron and one that all broadcast- shares. Nielsen does not encounter this problem

ers must understand. Although a radio sta- since the company uses respondent panels for

tion’s shares may change because of changes ratings information, which are more stable and

in actual listening, a primary reason for the reliable. (Arbitron has corrected this problem by

change is that different samples are used for using panels for its PPM methodology.)

each rating’s period. By virtue of using different

designation.) Each county in the United States belongs to one and only one DMA, and rankings are determined by the number of television households in the DMA. Radio ratings use the DMAs established from tele-vision households; they are not computed separately.

The **total survey area (TSA)** includes the DMA and MSA as well as some other areas the market’s stations reach (known as adja-cent DMAs). Broadcasters are most inter-ested in TSA data because they represent the largest number of households or people. In reality, however, advertising agencies look at DMA figures when purchasing commercial time for television stations and MSA figures when purchasing radio time. The TSA is used infrequently in the sale or purchase of adver-tising time; it serves primarily to determine the reach of the station, or the total number of people or households that listened to or watched a station or a channel. Nielsen’s term *NSI area* is equivalent to Arbitron’s *TSA*.

Ratings reports contain information about the TSA/NSI, DMA, and MSA. Each area is important to stations and advertisers for various reasons, depending on the type of product or service being advertised and the goals of the advertising campaign. For

instance, a new business that places a large number of spots on several local stations may be interested in reaching as many peo-ple in the area as possible. In this case, the advertising agency or individual client may ask for TSA/NSI numbers only, disregarding the DMA and metro data.

The **cume** (cumulative audience) or **reach** is an estimate of the number of different people who listened to or viewed at least five minutes within a given daypart (the five minutes do not have to be consecutive). The cume is also referred to as the *undupli-cated audience*. For example, a person whowatches a soap opera at least five minutes each day Monday through Friday would be counted only once in a cume rating, whereas the person’s viewing would be “duplicated” five times in determining average quarter-hours, which is discussed next.

The **average quarter-hour (AQH)** is an estimated average of the number of persons or households tuned to a specific station for at least five minutes during a 15-minute time segment (the five minutes do not have to be consecutive). Unlike the cume, where a per-son is counted only once during a Monday– Friday program, the listener or viewer would be counted five times for the time period.

|  |  |
| --- | --- |
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Cume represents the number of different people in the audience; AQH represents the average number of people in the audience.

Cume and AQH estimates are provided for the TSA/NSI, DMA, and MSA in all rat-ings books. Stations are obviously interested in obtaining high AQH figures in all demo-graphic areas because these figures indicate how long an audience is tuned in and thus how loyal the audience is to the station. The AQH data are used to determine the average radio listener’s **time spent listening (TSL) or** **time spent viewing (TSV) for television** dur-ing a given day or daypart. All stations try to increase their audience TSL because it means that the audience is not continually switch-ing to other stations.

The **gross rating points (GRPs)** are a total of a station’s ratings during two or more day-parts and estimate the size of the gross audi-ence. Advertising purchases are often made via GRPs. For example, a radio advertiser who purchases 10 commercials on a station may wish to know the gross audience that will be reached. Using hypothetical data, the GRP calculation is shown in Table 14.4. The gross rating point indicates that about 32.4% of the listening audience will be exposed to the 10 commercials.

A useful figure for radio stations is the **audience turnover**, or the number of times the audience changes during a given day-part. A high turnover is not always a nega-tive factor in advertising sales; some stations have naturally high turnover (such as Top 40 stations, whose audiences comprise mostly younger people who tend to change stations frequently). A high turnover simply means that an advertiser needs to run more spots to reach the station’s audience. Usually such stations compensate by charging less for commercial spots than stations with low turnovers.

Turnover is computed by dividing a sta-tion’s cume audience by its average persons total. (Both these figures are reported in ratings books.) Consider three stations in the Monday–Friday, 3:00–6:00 p.m. daypart, as shown in Table 14.5. In this market, an advertiser on Station C would need to run more commercials to reach all listeners than one who advertises on Station A. However, Station C, in addition to having a smaller au-dience, may have the demographic audience most suitable for the advertiser’s product.