JOMC 172 • Homework 02 (Reach & Frequency)

You will use the data from Homework02.xls (and Homework01.xls) to complete these problems.

*How to use a reach table.*

Use the TV Reach Table in Homework02.xls. This table allows you to estimate the reach achieved by various TV dayparts at different GRP levels. For media planning purposes, a reach table is an efficient way to estimate reach/frequency when you don’t have access to dedicated media planning/buying software.

Example: Suppose you want a four-week reach of 60 and want to use Prime time network TV.
1. Look at the “Prime” row and read across until you find at least 60 reach. You’ll see that 200 GRPs will achieve a reach of 62, while 150 GRPs will achieve a reach of 57.
2. Estimate the number of GRPs needed to achieve a 60 reach (approximately 180 GRPs).
3. To figure average frequency, divide the GRPs by reach: 180 ÷ 60 = 3.0.

Example: Suppose you plan to buy 175 GRPs in Late Fringe and want to determine reach and frequency.
1. Look at the “Late Fringe” row. Since there is no column for 175 GRPs, you will have to estimate by examining the two closest GRP levels.
2. 150 GRPs will achieve a 35 reach and 200 GRPs will achieve a 38 reach. Estimate the reach for 175 GRPs (approximately 37).
3. To figure average frequency, divide the GRPs by reach: 175 ÷ 37 = 4.73 = 4.7.

Problem #1: What are the reach and frequency levels for the prime time network schedule presented in Homework01.xls?

*Estimating reach and frequency for a media mix (2 dayparts/media).*

Most media plans involve using a mix of dayparts and/or media. Without access to dedicated media planning software, an accepted statistical method for combining the reach of two dayparts and/or media is by random combination, which assumes that those not reached by one daypart/medium have an opportunity to be exposed to the second daypart/medium. This opportunity increases as the proportion of those not reached by the first daypart/medium increases.

Example: Suppose you want to estimate the reach and frequency of a schedule of 200 GRPs in prime time and 100 GRPs in Early News.
1. Use the TV Reach Table in Homework02.xls to estimate reach for each daypart (200 prime GRPs = 62 reach; 100 Early News GRPs = 39 reach).
2. Use the Random Combination Table in Homework02.xls to estimate the combined reach and frequency. Find the row in column A for the lowest reach (39) and read across until you find the column for the other reach level (62). The estimated reach for the combination is 77.

3. Compute frequency by adding the GRP levels \((200 + 100 = 300)\) and dividing by the combined reach: \(300 \div 77 = 3.896 = 3.9\).

Problem #2: What are the reach and frequency levels for a schedule of 125 Early AM GRPs and 175 Prime Access GRPs?

Estimating reach and frequency for a media mix (more than 2 dayparts/media).

As you increase the number of dayparts/media used in the mix, the random combination method tends to overestimate reach. You can still use this method but you need to adjust your answer to account for this overestimation.

Example: Suppose you want to estimate the reach and frequency of a schedule of 200 GRPs in prime time, 100 GRPs in Early News, and 75 GRPs in Early AM.

1. Use the TV Reach Table in Homework02.xls to estimate reach for each daypart (200 prime GRPs = 62 reach; 100 Early News GRPs = 39 reach, 75 Early AM GRPs = 22 reach).

2. Use the Random Combination Table in Homework02.xls to estimate the combined reach and frequency. Find the row in column A for the lowest reach (22) and read across until you find the column for the next highest reach level (39). Since there is no row for 22, use the row for 25. The estimated reach for 25 & 39 GRPs is 54.

3. Repeat the process. The estimated reach for 54 & 62 reach is 83.

4. This formula tends to overestimate reach for three or more dayparts/media. It is recommended that the results be reduced up to 10 percent, depending on the number of dayparts/media used. When using a combination of 3 dayparts/media, adjust this answer by 5% \((.95 \times 83 = 78.85 = 79)\).

<table>
<thead>
<tr>
<th>Number of Vehicles/Dayparts/Media</th>
<th>Percentage of Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>5+</td>
<td>10</td>
</tr>
</tbody>
</table>

5. Compute frequency by adding the GRP levels \((200 + 100 + 75 = 375)\) and dividing by the combined reach: \(375 \div 79 = 4.75 = 4.8\).

Problem #3: What are the reach and frequency levels for a schedule of 50 Early AM GRPs, 175 Early News GRPs, and 125 Prime time GRPs?
Estimating reach and frequency using the Sainsbury formula.

You don’t always have a random combination table available. There is a simple and elegant solution for combining estimating reach and frequency when two or more dayparts/media are involved. It is often referred to as the Sainsbury formula, named after its creator, E.J. Sainsbury. The results are the very similar to the results of using the random combination method (differences are primarily due to rounding) and the calculations for this formula are not difficult.

Example: Suppose you want to estimate the reach and frequency of a schedule of 200 GRPs in Prime time, 100 GRPs in Early News, and 75 GRPs in Early AM.

1. Use the TV Reach Table in Homework02.xls to estimate reach for each daypart (200 prime GRPs = 62 reach; 100 Early News GRPs = 39 reach, 75 Early AM GRPs = 22 reach).

2. Because reach is a percentage, convert each reach number to its decimal equivalent.

<table>
<thead>
<tr>
<th>Daypart</th>
<th>GRPs</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime time</td>
<td>200</td>
<td>.62</td>
</tr>
<tr>
<td>Early News</td>
<td>100</td>
<td>.39</td>
</tr>
<tr>
<td>Early AM</td>
<td>75</td>
<td>.22</td>
</tr>
</tbody>
</table>

3. Compute the non-reach for each daypart by subtracting the reach (in decimal format) from 1. (If the reach in Prime time is 62, then 38 percent are not reached: 1-.62 = .38.)

<table>
<thead>
<tr>
<th>Daypart</th>
<th>GRPs</th>
<th>Reach</th>
<th>Non-reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime time</td>
<td>200</td>
<td>.62</td>
<td>.38</td>
</tr>
<tr>
<td>Early News</td>
<td>100</td>
<td>.39</td>
<td>.61</td>
</tr>
<tr>
<td>Early AM</td>
<td>75</td>
<td>.22</td>
<td>.78</td>
</tr>
</tbody>
</table>

4. Multiply the non-reach figures by each other. This calculates the non-reach for the combination (.38 x .61 x .78 = .18 non-reach).

5. Subtract the non-reach from 1 (1-.18 = .82) and convert back to percent format (.82 x 100 = 82).

6. Make the adjustment for using 3 dayparts/media (.95 x .82 = 77.9 = 78 reach).

7. Compute frequency by adding the GRP levels (200 + 100 + 75 = 375) and dividing by the combined reach: 375 ÷ 78 = 4.81 = 4.8.
Problem #4: What are the reach and frequency levels for a schedule of 50 Early AM GRPs, 175 Early News GRPs, and 125 Prime time GRPs? Use the Sainsbury formula rather than the random combination table.

The examples so far have just used differing TV dayparts, however, the same process can be used to estimate the reach and frequency for a media mix.

Problem #5: Use the TV Reach Table, the 4-Media Reach Table, and the Random Combination Table in Homework02.xls to estimate the combined reach and frequency for each of the following three schedules. Don’t forget to make the necessary adjustments when more than 2 dayparts/media are used.

<table>
<thead>
<tr>
<th>Medium/Daypart</th>
<th>Schedule A GRPs</th>
<th>Schedule B GRPs</th>
<th>Schedule C GRPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV (Prime time)</td>
<td>250</td>
<td>175</td>
<td>125</td>
</tr>
<tr>
<td>Cable TV (10 channels)</td>
<td>125</td>
<td>125</td>
<td>100</td>
</tr>
<tr>
<td>Magazines (Mass)</td>
<td>0</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Newspapers</td>
<td>0</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

Problem #6: Estimate the combined reach and frequency of the three schedules in Problem # 5 using the Sainsbury formula.

Problem #7: Compare the reach and frequency levels for the three schedules from Problems 5 & 6. What patterns emerge? Explain.

Effective Reach and Effective Frequency

Estimating the frequency distribution of a media schedule is virtually impossible without dedicated media planning software. However, the “RF Pattern” table in Homework02.xls gives you some general estimates for television.

Example: Suppose you want to estimate the effective reach for a schedule of 100 TV GRPs. Assume that the effective frequency level for the client is 2+.

1. Look at the 100 GRP row in the RF Pattern table. The table shows a reach of 28.5 at a frequency of 1, a reach of 16.0 at a frequency of 2, a reach of 7.4 at a frequency of 3, etc.
2. The total reach for 100 GRPs is 55.8. If the effective frequency level is 2+, then the effective reach would be the percentage of the target reached two or more times. To compute this, add the reach figures for frequency levels 2 through 10+ (or simply subtract the reach at a frequency of 1 from the total). The effective reach (2+) = 27.3.

Problem #8: Estimate the effective reach of a schedule of 500 TV GRPs assuming that the effective frequency level is 3+.