

READERSHIP INSTITUTE

Media Management Center at Northwestern University

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Understanding and Calculating Reader Behavior Scores

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Introduction: Why measure RBS?

What newspapers want and need to do is to change the way people read the newspaper -- to induce people to read more often, to spend more time with the newspaper, to read more parts of it, on weekdays and on Sundays. It's all about changing reader behavior.

The first step to changing those behaviors is measuring them in greater detail. The Readership Institute, as part of its Impact study of readership, developed (and tested with 37,000 consumers in 100 U.S. markets) a short series of questions that drive to the dimensions of frequency, time and completeness of reading.

With this information, newspapers can calculate a "Reader Behavior Score" (RBS) for the overall newspaper, individual sections, and different demographic groups. Having established a baseline measure, newspapers can track progress over time by measuring RBS periodically – seeing, for instance, whether content initiatives are intensifying the reading behaviors of the target groups.

Measuring RBS has great value to individual newspapers. Additionally, in the long-term, it will be possible to establish industry norms, so that newspaper can not only track their own progress, but see how they are doing compared to the industry, other newspapers in similar markets and newspapers of similar circulation size.

The questions can easily be added to newspapers' current readership survey repertoire. The questions (see below) measure time, frequency, and completeness of reading, during the week and on Sundays. Using the instructions below, responses to these questions can be combined into one RBS score for each respondent. On a 1-7 scale, an RBS of 1 represents someone who rarely or never looks into the newspaper, while an RBS of 7 depicts a person who spends a great deal of time reading most of the paper, every day of the week.

The RBS approach captures important dimensions of newspaper usage that other measures do not. There are precedents for incorporating frequency and time; completeness offers another important dimension in characterizing reading behavior. Consider two people who both read a newspaper every day and for the same amount of time. One skims the entire newspaper, reading headlines and the first few paragraphs of each story. The other reads a few stories, start to finish, from some parts of the paper. Their use of the paper is qualitatively different on the dimension of completeness.

Standards for conducting RBS research

1. When comparing your RBS to industry standards, use only respondents from your “core market”

RBS research needs to be confined exclusively to your core market—defined as the primary market where the bulk of your marketing efforts go.

Do not include fringe areas or pockets within your core market that have low penetration because doing so will result in a systematically lower RBS score and make it impossible to compare your market accurately to other markets and industry norms. (You may want to also survey individuals outside your core market. But make sure you do not include these respondents in your newspaper-wide RBS score.)

For comparability of data in and among markets over time, the Readership Institute has developed a “standard” definition of the core market. Please note, however, that the majority of newspapers are now simply using their own “core market” definition—many simply survey respondents in their Newspaper Designated Market (NDM). This is acceptable (and probably much easier for you) as long as the newspaper maintains the same market definition over time to ensure comparability of your newspaper’s scores over times.

The standard we used in the original Impact research is as follows:

1. Calculate the 7-day average number of copies circulated in each ZIP code.
2. Put each ZIP code in descending order by the number of copies circulated in each ZIP code.
3. The ZIP codes whose cumulative sum equals 80 percent of the newspaper's total average circulation should make up your core market.
4. As alluded to above, because the survey is administered randomly to all adults in each qualifying ZIP code—not just readers or subscribers—including ZIP codes beyond the 80 percent will likely lead to systematically lower RBS scores vs. industry norms as well as other newspapers that use this standard.

Some newspapers may be hesitant to change their market definitions because they want future studies to be consistent with previous ones. Again, it is not mandatory that you use our definition. If you do use our method, you can still conduct your studies with old market definitions. But when computing a newspaper RBS score, only respondents from ZIP codes within the “core market” should be included.

One way to extract “RBS compliant” data from existing telephone studies is to ask for the respondent’s ZIP code as one of the initial questions. Based on the ZIP code, the respondent can be classified as either eligible or ineligible for inclusion in the RBS calculation. From whatever sample or market you study, it is important to draw a sample size of at least 300 randomly selected adult respondents from the core market ZIP codes. Then, with the steps above you can compare these results to industry norms.

2. Procedures for sampling people in your core market

For the ZIP codes defined as the core market, collect information about the number of occupied households from the Postal Service. In each ZIP code, survey in proportion to the number of occupied households to produce uniform market coverage. Randomly select adult members of the household. (In the Readership Institute research, the individual in the household 18 years or older with the most recent birthday was asked to complete the survey.)

The research sample must produce a minimum of 300 completed interviews¹ with no more than one interview per household.

To report results by categories - subscribers, single copy recipients, or any other subgroup - the study must produce at least 200 respondents in each category. In the event that a completed study does not yield 200 respondents in one or more of these categories, the newspaper must choose either to:

- Omit reporting profile data for the category/categories in question, or
- Conduct additional, randomly selected interviews to attain the 200-respondent minimum.

The sample must then be weighted so that the number of additional interviews, when added to the original sample size, represents only the proportion indicated in the original sample.

For example, suppose that after 300 interviews are completed, a study yields only 150 subscribers representing 50 percent of the total sample. If the newspaper wishes to report an RBS for subscribers, the newspaper may continue interviewing, and only query respondents who identify themselves as subscribers. Once 50 additional interviews are

¹ Our analysis indicates that in 19 out of 20 cases (95%), the mean RBS score based on a sample size of 300 will differ by no more than .24 in either direction from what would have been obtained by seeking out all adults in your market. For a sample size of 400 that number is .18 and for 500 the number is .16.

completed - bringing the total number of subscribers interviewed to 200 - these additional interviews are added to the original 300. To maintain the integrity of the total sample, the subscriber interviews (200) must then be weighted so that subscribers represent only 50 percent of the total sample (350), as established by the original 300 interviews.

NOTE: For a more detailed explanation of estimating sample size, see the appendix.

3. Data weights

Data should be weighted at least by age and gender, and, if necessary, by any other factors needed to accurately represent your particular market. With this and other issues, we assume your research complies with commonly accepted marketing research practices.

4. Screener questions

For telephone interviews, other than asking for a ZIP code and determining that the respondent is over the age of 18 (both to determine if they qualify for inclusion in the RBS calculation), there should be no screening questions before the RBS questions, although the RBS battery of questions may need to follow other readership questions as required by Audit Bureau of Circulation (ABC) requirements. Every respondent should get the RBS questions—not just subscribers, those who read in the last seven days, etc.

5. Demographic questions

Include at least age and gender questions and whatever geographic or zoning questions the paper typically asks. You should also ask a wide variety of demographic questions, including size of household, education, income, home ownership, subscriber status, read online, media usage, and other readership measurements (like read yesterday) for cross-tabulation purposes.

For demographic questions in your research, please refer to the original RI consumer survey questionnaire, located at http://www.readership.org/consumers/survey/data/consumer_survey.pdf. Using these standard breakdowns for the demographic questions will facilitate comparisons across markets. Failure to use these breakdowns will make it difficult for your newspaper to compare subgroup analysis vs. other papers and the industry norms.

6. Calculating RBS for specific sections of the paper

In addition to measuring overall RBS of your paper, it is possible to assess RBS of a given section by including customized wording in the questionnaire. For section-specific RBS, you can simply add a second battery of questions after the standard RBS questions that ask about frequency, completeness, and time spent on a specific section. For example,

Weekday Time. How much time do you spend on an average **weekday** (Monday - Friday) reading or looking into **the sports section** of the newspaper?

To avoid respondent burnout, we recommend that you do not give each respondent more than two additional batteries of section RBS questions. (To measure RBS for more than two sections of the newspaper, simply rotate the sections among the respondents. Make sure to achieve a minimum of 200 responses per section.)

7. Computing RBS

STEP 1. Ask the respondent the following questions (Note that the numbers in parentheses indicate the keyed values, e.g., a response of "do not read" to the weekday frequency question is keyed as a 0 in the data set):

Weekday and Sunday Frequency. Which days do you read or look into [NAME OF NEWSPAPER] in an average 7-day week? (Check all that apply).

- | | |
|--|-----|
| <input type="checkbox"/> Do not read newspaper | (0) |
| <input type="checkbox"/> Monday | (1) |
| <input type="checkbox"/> Tuesday | (1) |
| <input type="checkbox"/> Wednesday | (1) |
| <input type="checkbox"/> Thursday | (1) |
| <input type="checkbox"/> Friday | (1) |
| <input type="checkbox"/> Saturday | (1) |

-
- | | |
|---------------------------------|-----|
| <input type="checkbox"/> Sunday | (1) |
|---------------------------------|-----|

Weekday Time. How much time do you spend on an average **weekday** (Monday - Friday) reading or looking into [NAME OF NEWSPAPER]?

- Do not read newspaper (0)
- 1-15 minutes (1)
- 16-30 minutes (2)
- 31-45 minutes (3)
- 46-60 minutes (4)
- 61 minutes or more (5)

Sunday Time. How much time, if any, do you spend reading or looking into any part of [NAME OF NEWSPAPER] on an average weekend **plus** any time during the week?

- do not read newspaper, (0)
- Less than 1/2 hour, (1)
- 1/2 hour to less than 1 hour, (2)
- 1 hour to less than 1 1/2 hours; (3)
- 1 1/2 hours to less than 2 hours, (4)
- 2 hours to less than 2 1/2 hours, (5)
- 2 1/2 hours to less than 3 hours, and (6)
- More than 3 hours. (7)

Weekday and Sunday Completion. How much of [NAME OF NEWSPAPER] do you read or look into on an **average weekday** and an **average weekend** ?
(Please check one box for weekday and one box for weekend.)

Weekday

- None/almost none, (0)
- 1/4, (1)
- 1/2, (2)
- 3/4, (3)
- Almost all/all. (4)

Weekend

- None/almost none, (0)
- 1/4, (1)
- 1/2, (2)
- 3/4, and (3)
- Almost all/all. (4)

STEP 2. To assign someone an RBS, transform each of the six scales to have a maximum value of 7 and a minimum value of 1, where the value 7 indicates maximum reading. For example, if the response to the completion question is keyed with values 0-4, the transformed version of a response x is simply $1+(6x/4)$.

RBS is the simple average of these six indicators (add them up and divide by 6).

Sample RBS Calculation:

Question	Answer	Keyed-in Response
Weekday Frequency	Monday, Tuesday, Saturday	3
Sunday Frequency	Sunday	1
Weekday Time	1-15 minutes	1
Sunday Time	2 ½ hours to less than 3 hours	6
Weekday Completion	1 / 2	2
Sunday Completion	3 / 4	3

Using the example responses from above, the scores for each question are calculated below.

In the formula, the denominator is the maximum response possible for each question. For example, the *weekday time* question is on a scale of 0-5 so the denominator is 5. The *Sunday frequency* question is on a 0-1 scale so the denominator is 1. Note that the denominator for the *weekday frequency* question is the number of weekdays your paper publishes (in most cases 6). In this example, the three is the number of days this respondent reads or looks into the newspaper in an average 6-day weekday.

Question	Keyed-in Response	Calculation
Weekday Frequency	3	$1+[6(\underline{3})/6] = 4.0$
Sunday Frequency	1	$1+[6*(\underline{1})/1] = 7.0$
Weekday Time	1	$1+[6*(\underline{1})/5] = 2.2$
Sunday Time	6	$1+[6*(\underline{6})/7] = 6.1$
Weekday Completion	2	$1+[6*(\underline{2})/4] = 4.0$
Sunday Completion	3	$1+[6*(\underline{3})/4] = 5.5$

* As indicated above, the weekday frequency variable is a count of the number of days during the week (Monday-Saturday) that a respondent typically reads the paper; it should take values 0, 1, ..., 6, assuming six weekday editions.

If a paper only publishes five days during the Monday-Saturday period, the formula should read $1+[6*(\text{number of days read})/5]$

STEP 3. RBS is the simple average of these six indicators (add and divide by 6).

$\text{RBS} = (4.0 + 7.0 + 2.2 + 6.1 + 4.0 + 5.5)/6 = 4.81$

For newspapers that do not publish either a Saturday or Sunday edition (or combined Saturday/Sunday edition), RBS is the simple average of weekday time, weekday frequency, and weekday completion. For newspapers that do not publish Sunday, but do publish Saturday, use Saturday frequency to calculate the *weekend frequency* portion of RBS. If your paper does not publish seven days a week and you have any questions about calculating this portion of RBS, feel free to contact the Readership Institute.

8. Special note for conducting telephone interviews

When incorporating the RBS battery into a telephone questionnaire, lead with the weekday and Sunday frequency questions. Ask a yes/no for each day of the week

If the respondent responds with “no” to each of the *frequency* questions, skip the remaining RBS questions. If they don't read on Sunday, skip the *Sunday completeness* and *Sunday time* questions. If they don't read on any weekday, skip the *weekday completeness* and *weekday time* questions.

RBS Telephone Script

1. Now I am going to ask you about which days you read or look into the [NAME OF NEWSPAPER].

In an average 7-day week, do you read or look into the [NAME OF NEWSPAPER] on... [READ LIST, PAUSING AFTER EACH DAY. ACCEPT MULTIPLE RESPONSES]

1 Monday?

How about...

2 Tuesday?

3 Wednesday?

4 Thursday?

5 Friday?

6 Saturday?

7 Sunday?

8 (DO NOT READ TO RESPONDENT) Don't read the [NEWSPAPER]

9 (DO NOT READ TO RESPONDENT) Read [NEWSPAPER] everyday

(Ask only if respondent reads on Sunday; Q1=7 or Q1=9)

2. Now I will ask you about the time you spend reading or looking into any part of the **Sunday** [NAME OF NEWSPAPER], including advertising inserts.

Would you say you spend less than hour, or do you spend an hour or more? Please include any time you spend on Sunday plus any time spent looking into the Sunday paper during the week.

[IF LESS ONE HOUR] On average do you spend more or less than ½ hour?

[IF AN HOUR OR MORE] On average do you spend an hour to less than 1 ½ hours, 1 ½ hours to less than 2 hours, 2 hours to less than 2 ½ hours, 2 ½ hours to less than 3 hours, or 3 hours or more?

- 1 Less ½ hour,
- 2 ½ hour to less than 1 hour,
- 3 1 hour to less than 1 ½ hours,
- 4 1 ½ hour to less than 2 hours,
- 5 2 hours to less than 2 1/2 hours,
- 6 2 1/2 hours to less than 3 hours,
- 7 3 hours or more.

(Ask only if respondent reads on Sunday; Q1= 7 or Q1=8)

3. How much of the [NAME OF NEWSPAPER]do you read or look into on an average Sunday? Would you say you read or look into...(READ LIST)

- 0 Almost none
- 1 About one quarter
- 2 About one half
- 3 About three-quarters
- 4 Almost all or all

(Ask only if respondent reads at least one day Q1. 1- 6)

4. How much time do you spend on an average **weekday**, Monday through Friday, reading or looking into the [NAME OF NEWSPAPER]?

On average, would you say you spend 30 minutes or less, or do you usually spend more than 30 minutes?

If [30 MINUTES OR LESS] On average, do you spend 15 minutes or less, or more than 15 minutes?

If [MORE THAN 30 MINUTES] On average do you spend 30-45 minutes, 46-60 minutes, or more than 60 minutes?

- 1 1-15 minutes
- 2 16-30 minutes
- 3 31-45 minutes
- 4 46-60 minutes
- 5 61 minutes or more

(Ask only if respondent reads at least one day Q1. 1- 6)

5. How much of the [NAME OF NEWSPAPER] do you read or look into on an average **weekday**, Monday through Friday? (Read list)

- 0 Almost none
- 1 About one quarter
- 2 About one half
- 3 About three-quarters
- 4 Almost all or all

Appendix A

Background on Estimating Sample Size

Estimating the sample size required for a marketing research study is a standard question that is addressed in most textbooks on marketing research. The Institute suggests Churchill and Iacobucci (2001), *Marketing Research Methodological Foundations*, 8th edition, Harcourt, pages 500-502 for further reading.

The required sample size depends on the following:

1. Desired margin of error (E). For example, does RBS need to be known within .1 scale points, or within .2 scale points. This is your decision.
2. Level of confidence / value from normal table (Z). Most organizations want to construct a 95% confidence interval and therefore use the value $Z=1.96$. We suggest following this convention.
3. Population standard deviation (S). This is the standard deviation of RBS in a particular market, which measurements how variable the values of RBS are in the market.

Once these three values have been agreed upon, the formula for sample size is

$$n = Z^2 * S^2 / E^2$$

Where does S come from?

Market researchers often estimate S from previous studies. The Impact study estimated RBS for 100 daily newspaper markets in the US. Here are summary statistics for the standard deviation of RBS in the 100 markets:

<u>Quartile</u>	<u>Std Dev RBS</u>
Maximum	2.12
Third Quartile	1.89
Median	1.78
First Quartile	1.70
Minimum	1.42

A typical newspaper market has a standard deviation (S) of RBS equal to 1.78. The smallest standard deviation in the Impact study was 1.42 and the largest was 2.12. The middle half of our newspapers had standard deviation between 1.70 and 1.89. These standard deviations were computed without sampling weights.

How accurate is an estimate of RBS from a sample of n=300?

Once the sample has been drawn, the margin of error is computed as margin of error = $Z \cdot S / \sqrt{n}$ where n is the actual number of responders and S is the standard deviation computed from the sample.

If we assume that a typical newspaper will have a standard deviation of RBS of $S=1.78$ and use the 95% confidence level ($Z=1.96$), the margin of error is $1.96 \cdot 1.78 / \sqrt{300} = .2$ scale points

Likewise, here are the margins of error for various sample sizes and the "typical" newspaper:

<u>n</u>	<u>margin of error</u>
50	0.49
100	0.35
200	0.25
300	0.20
400	0.17
500	0.16
1000	0.11

The interpretation of margin of error for a sample of $n=300$, is: in 19 cases out of 20, the results based on such samples will differ by no more than 0.2 scale points in either direction from what would have been obtained by seeking out all consumers in the market and measuring their RBS value.