

# Handout #4: Readability Guidelines

## Readability Scores

### What is a readability score?

A readability score is the grade level you need to have completed to be able to read the text.

## Pros and Cons of Readability Formulas

Pros	Cons
<p>Readability formulas:</p> <ul style="list-style-type: none"><li>• Measure what grade level a person must have completed in order to read a text</li><li>• Are text-based</li><li>• Are easy to use</li><li>• Do not need real readers to measure</li><li>• Can first identify whether a text will be too complex for your reader.</li></ul> <p>In summary, readability formulas provide a yes or no answer to, “Will I be able to read this text if I have an X-grade reading level?”</p>	<p>Readability formulas cannot:</p> <ul style="list-style-type: none"><li>• Tell you if a person will understand or be able to interpret the text</li><li>• Measure the complexity of a word or phrase.</li></ul> <p>The readability measurements that formulas provide are purely quantitative.</p>

## Readability Formulas

### Fry Graph

A commonly used readability assessment tool. An example can be found at the Centers for Disease Control and Prevention, Office of Science Policy and Technology Transfer’s Fry Graph page ([www.cdc.gov/od/ads/fry.htm](http://www.cdc.gov/od/ads/fry.htm)).

Directions:

1. Select 3 100-word passages.
  - Ideally one passage from the beginning, middle, and end
  - Do not count acronyms, numerals (e.g., 1, 2, 3), or Web sites.
2. Count the number of sentences in each passage.
3. Count the number of syllables in each passage.
  - Short cut: Each word has at least one syllable; therefore, skip the first syllable and count the additional syllables. Take this number of syllables and add 100 (to account for the first syllables).
  - Every syllable of every word should be counted regardless of how many times a word is repeated throughout the passage.

4. Average the number of sentences and syllables.
  - Special cases: If there are more than 100 but fewer than 300 words in a document, then count the total number of sentences and syllables in that document. Divide the number of sentences and the number of syllables by the total number of words in the document and multiply by 100. These are the approximate averages of sentences and syllables if the document were 100 words. Continue on to step 5.
5. Find the corresponding number set (coordinates) on the Fry Graph available at <http://discoveryschool.com/schrockguide/fry/fry2.html>.
  - Use the grade-level table (not age in years).
  - The number of sentences is on the x-axis and the number of syllables is on the y-axis.
  - NOTE: Extend the lines to estimate the reading level of outliers.
  - If a number set is on a line, then identify both grades. For instance, 7.3 sentences and 148 syllables would be grade level 7/8.

### **SMOG (Statistical Measure of Gobbledygook) Formula**

Used less frequently than the Fry Graph, but still widely used. An example can be found at the University of Utah Health Science Center's Smog Readability Formula page (<http://uuhsc.med.utah.edu/pated/authors/readability.htm>).

Directions:

1. Use the SMOG Formula for documents with 30 or more sentences.
2. Select three 10-sentence passages from the document.
  - Ideally, one passage from the beginning, middle, and end
3. Count the number of "big words," words with three or more syllables, in each passage.
  - If there is a big word repeated three or more times in a single 10-sentence passage, count the word only once per each 10-sentence passage. For example:
    - The word "mammogram(s)" is repeated four times in the first 10-sentence passage; it should be counted once. In the second 10-sentence passage mammogram(s) is repeated twice; therefore, it should be counted twice. In the final 10-sentence passage mammogram is repeated three times; therefore, it should be counted once. In this particular example "mammogram" accounts for four of the big words counted in the document.
4. Find the corresponding grade level on the SMOG conversion table available at <http://uuhsc.med.utah.edu/pated/authors/readability.html>.

## **Fog Index (sometimes referred to as Gunning-Fog)**

Directions:

1. Use for documents with fewer than 30 sentences.
2. Count the total number of words in the document.
  - Do not count acronyms, numerals (e.g., 1, 2, 3), or Web sites.
3. Count the number of big words, words with three or more syllables, in the document.
4. Count the number of sentences in the document.
5. Calculate the average sentence length (words in a sentence) in the document. Divide the total number of words by the total number of sentences.
6. Calculate the percentage of big words in the document. Divide the number of big words in the document by the total number of words in the document and multiply by 100.
7. Add the average sentence length and percentage of big words together (the values calculated in steps 5 and 6).
8. Multiply the sum by 0.4. The resulting number is the Fog Index or grade level.
9. For an example of a Fog Index calculation go to [www.fpd.finop.umn.edu/groups/ppd/documents/information/writing\\_tips.cfm](http://www.fpd.finop.umn.edu/groups/ppd/documents/information/writing_tips.cfm).

## **Choosing a Readability Formula**

1. Two readability measurements should be calculated for each document.
2. Perform a Fry Graph calculation for each document regardless of length.
3. Depending on the length of the document, perform either a SMOG Formula or Fog Index calculation.
  - For longer documents (30 or more sentences) perform a SMOG Formula calculation.
  - For shorter documents (fewer than 30 sentences) perform a Fog Index calculation.
4. Average the Fry Graph and SMOG Formula/Fog Index readability measurements together.
5. Be advised: Fry Graphs are more forgiving, meaning that typically the reading level calculated through a Fry Graph will be lower than the reading level approximated by the SMOG Formula or Fog Index.
  - Re-check your calculations if the Fry Graph and SMOG Formula/Fog Index reading levels are very different.
6. Figure out a system to reduce miscounting. For example:
  - Use a colored pen.
  - Block off each of the passages to be measured with a line or a box. Please note: it is easier to measure similar sections of the document for the SMOG Formula/Fog Index and

Fry Graph. Obviously the length of the passage taken from the section will be different (For a Fry Graph it will be 100 words, and for a SMOG Formula it will be 10 sentences).

- Put a dot over every multiple syllable (not counting the first syllable). Then put a strike through the syllable after you have counted it.
- Go back and circle each word that has at least two dots over it (these are the big words).

## When To Measure Documents for Readability

### Which documents should be measured for readability?

- Any document intended for the public.
- Health professional guides and other materials not intended for the general public do not have to be measured.
  - NOTE: Any handouts or slides that may be distributed to the public from the presenters' materials must be measured for readability.
- There may be several documents that need separate reading level measurements within a single resource. For example:
  - A tobacco education manual has five newsletters, three fact sheets, a story, and two questionnaires. If the newsletters are in a series, they can be treated as a single document. Therefore, the tobacco education manual requires 7 Fry Graph and SMOG Formula/Fog Index calculations (1 for newsletters + 1 for each fact sheet (3) + 1 for the story + 1 for each questionnaire (2) = 7).
- When in doubt, do the count: If you are not sure whether readability is necessary, go ahead and perform it. It is better to remove a reading level calculation than have to return and perform it later.

### Activity: Practice Passage

To practice conducting a readability test, use the following passage.

#### Working with Market Research Professionals

You may need to hire or contract with two kinds of market research professionals as you design, conduct, and analyze your concept and materials testing:

1. Someone to design the research and data instruments (e.g., questionnaires, discussion guides, screeners), to analyze the results, and to prepare a report.
2. A vendor to handle the fieldwork (i.e., recruiting and hosting focus groups; administering telephone, mail, or in-person surveys)

Ideally, these professionals will have a background in health communication or, if not, a background in marketing or advertising research. You can get the best service from these professionals by:

- Providing clear research objectives and appropriate background information, including the creative brief.
- Learning enough about common communication research methods to understand their strengths and limitations, so that you don't ask for more than a given method can deliver (e.g., asking, "What percentage of the American public does that represent?" when a focus group study was conducted).
- Letting market researchers' expertise guide your selection of methods. Rather than saying, "We want to focus test this," explain your research objectives, timing, budgetary constraints, and any additional factors (such as the need for a publication to be tested with people from a wide range of cultures). Then let the experts propose methods to you and explain their rationale.
- Being realistic about timeliness, quantity of information, materials to be tested at one time, and the level of "proof" you need. Pretesting is diagnostic; it can provide guidance on what needs to be improved, but it can't tell you how successful something will be. Other factors, such as the final production of your message, the number of people who see it, the frequency with which it is seen, and the presence of competing messages will all influence your message's success.
- Recognizing that there are inherent differences between testing advertising and other commercial communication materials versus testing health communication materials, even if the channel and activity (e.g., a television spot) are the same. Individuals trained in commercial concept development and copy testing will be able to draw on their commercial experience for selecting the appropriate methodology. However, they often have little experience assessing reactions to complex health messages; they are more familiar with assessing efforts to direct an existing behavior toward use of a particular product brand than with assessing efforts to completely change a behavior.

Sometimes, one individual or organization can play both roles; at other times, you may have internal staff, a consultant, or staff at a health communication firm to handle the first role but contract externally for the second. The American Marketing Association's *Green Book* lists suppliers and services geographically throughout the United States. Other sources include the Marketing Research Association, the Association of Public Opinion Researchers, the Qualitative Research Consultants Association, and faculty at university departments of marketing, communication, health education, psychology, and sociology.

(from *Making Health Communication Programs Work*, NCI, 2002, pp.130-131)

## References

Friedman, D., Hoffman-Goetz, L., and Arocha, J. (2004). Readability of cancer information on the Internet. *Journal of Cancer Education*, 19(2), 117-122.

McGraw, H.C. (n.d.). The SMOG readability formula. In *Patient Education Materials: An Author's Guide: Readability Testing*. Retrieved September 2004, from University of Utah Health Sciences Center Web site:

<http://uuhsc.med.utah.edu/pated/authors/readability.html>

McLaughlin, G. (1969). SMOG grading: A new readability formula. *Journal of Reading*, 12(8) 639-646.

Redish, J. (2000). Usability testing reveals more than readability formulas reveal: Readability formulas have even more limitations than Klare discusses. *ACM Journal of Computer Documentation*, 24(3), 132-137.

Schrock, K. (n.d.). Teacher helpers: Fry's readability graph. In *Kathy Schrock's Guide for Educators*. Retrieved September 2004, from <http://school.discovery.com/schrockguide/fry/fry2.html>

Shedadeh, C.M.H., and Strother, J.B. (1994). The use of computerized readability formulas: Bane or blessing? (STC proceedings). Retrieved September 2004, from [www.stc.org/confproceed/1994/PDFs/PG225227.PDF](http://www.stc.org/confproceed/1994/PDFs/PG225227.PDF)

Writing tips: Fog Index. (n.d.). Retrieved September 2004, from [www.fpd.finop.umn.edu/groups/ppd/documents/information/writing\\_tips.cfm](http://www.fpd.finop.umn.edu/groups/ppd/documents/information/writing_tips.cfm)