**APPENDIX B: EXPERT ELICITATION**

**Estimating the Information Absorption Factor (IAF)**

In May 2016, the authors convened an expert panel of social scientists and health communication experts to estimate the IAF. We asked these experts to come to a consensus on 1) which characteristics of the risk communication and the target audience influence information absorption and 2) how important each characteristic is for information absorption.

The characteristics of the risk communication are divided into two groups, summarized in Appendix Table B1. The first group defines how the risk communication is delivered while the second group defines the contents of the risk communication. The experts assigned each characteristic an absorption score ranging from 1 (for extremely low absorption) to 9 (for extremely high absorption) to indicate its contribution to information absorption, as reported in Appendix Table B2. Note that in cases where an attribute is not present, it was assigned an absorption score of zero because it would not contribute to information absorption. For example, if no outcomes are presented, then framing cannot contribute to information absorption. Therefore, this attribute is assigned an absorption score of zero.

Based on the results of the expert elicitation, a risk communication can yield an absorption score between 7 and 65.[[1]](#footnote-1) Practically, this means that an information treatment with an IAF of 1 would have most of the characteristics with high mean absorption scores (shown in Table 1 of the manuscript) and an information treatment with an IAF of 0 would have most of the characteristics with low mean absorption scores (shown in Table 2 of the manuscript). We use the extreme values to rescale the total absorption score to fall within the closed interval from 0 to 1:

 $\hat{IAF}=\frac{Score-7}{65-7}$. (B.1)

The characteristics of the audience also influence the response to health communications. The expert panel identified seven target audience characteristics likely to influence the size of the IAF, shown in Appendix Table B3. The seven characteristics are distributed into three groups: basic demographic characteristics, the intended user of the information (final consumer or types of caregivers), and membership in a vulnerable population. The experts assigned scores to each target audience characteristic to indicate how the information absorption would differ from that of the “average” person. These scores range from −4 for extremely below-average absorption to +4 for extremely-above average absorption. When the target audience consists of multiple groups for a given demographic characteristic (e.g., ages 18-44 years and 45-64 years), we use the simple average of the scores. We use the scores to create an audience adjustment to be added to the unadjusted IAF while keeping the final IAF between 0 and 1.

The combination of audience characteristics associated with the largest above-average information absorption yield total audience scores of 10 for non-vulnerable populations and 14 for vulnerable populations. For a target audience defined by these characteristics, the distance between the IAF estimated for an average consumer and the maximum IAF of 1 would be reduced by one-third for regular populations and two-thirds for vulnerable populations. If the total audience score is positive, the target audience adjustment for a non-vulnerable population is given by:

$\hat{IAF\_{Adj}^{Pos,NV}}=\left(\frac{Score}{10}\right)∙\left(\frac{1}{3}\right)∙\left(1-\hat{IAF}\right).$ (B.2)

Similarly, the target audience adjustment for a vulnerable population with a positive audience score is given by:

$\hat{IAF\_{Adj}^{Pos,V}}=\left(\frac{Score}{14}\right)∙\left(\frac{2}{3}\right)∙\left(1-\hat{IAF}\right).$ (B.3)

Some audience characteristics may reduce information absorption. The combination of audience characteristics associated with the most below-average information absorption yields a total audience score of −11. For a target audience with these characteristics, the IAF would be three-fourths smaller than the one calculated for an average consumer. If the total audience score is negative, the target audience adjustment for both non-vulnerable and vulnerable populations is given by:

$\hat{IAF\_{Adj}^{NEG}}=-\left(\frac{Score}{-11}\right)∙0.75∙\hat{IAF}.$ (B.4)

We add the audience adjustment, whether positive or negative, to the unadjusted information absorption factor to give us the information absorption factor used to project behavioral responses.

**Estimating Spillover Effects**

From our expert elicitation, we obtained estimates of the size of spillovers for different demographic groups. We asked the expert panel to suppose that the target group of an information treatment was defined by a demographic characteristic or membership in a vulnerable population. Based on their experience and knowledge, they gave the expected size of the spillover effect for consumers not in that target audience, expressed as a proportion of the change in willingness to pay for the target group. Appendix Table B4 reports the consensus minimum, most likely, and maximum estimates of spillover effect by target audience. The experts concluded that for a target audience defined by multiple demographic characteristics, the best way to approximate the spillover effect would be to take a simple average of the spillovers for the individual target populations.

Table B1. List of Important Communication Characteristics

| Characteristic | Attributes | Description |
| --- | --- | --- |
| Delivery of Risk Communication |
| Channel of communication | For example, TV, radio, newspaper, magazine, social media, product label | Means through which new health information can be relayed to the public  |
| Medium of communication | Text, visual (e.g., images, symbols), audio, audiovisual | The way new health information is presented (e.g., textually, visually) |
| Frequency of exposure | Frequently, moderately, occasionally, rarely | The rate at which consumers are exposed to the new information (impact on absorption influenced by whether new information perceived to be surprising) |
| Content of Risk Communication |
| Framing  | Gain framing of outcomes, loss framing of outcomes, no outcomes presented | If health outcomes are presented in the risk communication, are they presented as gains to the consumer or losses?  |
| Risk information content | Numeric, descriptive, narrative, none | If risk information is presented in the communication, is the information numeric (e.g., “10% chance”), descriptive (e.g., “high risk”), or narrative (e.g., a personal story of a person who suffered or died)?  |
| Elicits emotion | Positive, negative, no emotion elicited | Is the information presented in a way to elicit emotions? If so, are the emotions positive (e.g., happiness) or negative (e.g., fear)? |
| Recommends action  | Yes, no | Does the risk communication recommend the consumer perform an action (e.g., eat no more than 3 oz. of fish each week)? |
| Requires acknowledgement of receipt | Yes, no | Does the risk communication require the consumer to acknowledge receiving the information? |
| Number of arguments presented | 3 or fewer arguments, 4 or more arguments | How many arguments does the risk communication present to convince the reader? |
| Intended scope of the audience | General, specific | Is the risk communication intended for a general audience (e.g., all adults) or a specific audience (e.g., Spanish-speaking adults)? |
| Uses norms | Yes, no | Does the risk communication use social norms to persuade the consumer?  |

Source: Expert panel conducted at RTI on May 23–24, 2016.

Table B2. Information Absorption Score by Communication Characteristic

|  |  |  |
| --- | --- | --- |
| Characteristic | Attribute | Mean Absorption Score (MAS) |
| **Delivery Characteristics** |
| Channel of communication: advertising | Newspaper ad: text | 1 |
| Newspaper ad: text and visual | 2 |
|  | Outdoor ad: text | 3 |
|  | Outdoor ad: text and visual | 4 |
|  | Magazine ad: text | 2 |
|  | Magazine ad: text and visual | 3 |
|  | Radio ad: audio | 5 |
|  | TV ad: audiovisual | 7 |
| Channel of communication: advisories | Direct-to-consumer advisory: text | 1 |
| Direct-to-consumer advisory: text and visual | 2 |
|  | Direct-to-provider advisory: text | 4.5 |
|  | Direct-to-provider advisory: text and visual | 5.5 |
|  | Government website: audio and text and visual | 5 |
|  | Government website: text | 2 |
|  | Government website: text and visual | 3 |
| Channel of communication: labeling | Point-of-sale labeling: text | 3 |
| Point-of-sale labeling: text and visual | 5 |
|  | Product or package label: text | 4 |
|  | Product or package label: text and visual | 6 |
|  | Other labeling: text | 1 |
|  | Other labeling: text and visual | 1 |
|  | Product or package and point-of-sale labeling: text | 6 |
|  | Product or package and point-of-sale labeling: text and visual | 8 |
|  | Product or package and other labeling: text | 5 |
|  | Product or package and other labeling: text and visual | 7 |
|  | Point-of-sale and other labeling: text | 4 |
|  | Point-of-sale and other labeling: text and visual | 6 |
|  | Product or package label and point-of-sale labeling and other labeling: text | 7 |
|  | Product or package label and point-of-sale labeling and other labeling: text and visual | 9 |
| Table B2. Information Absorption Score by Communication Characteristic (continued) |
| Characteristic | Attribute | MAS |
| Delivery Characteristics |
| Channel of communication: social media | Social media: audiovisual | 3.5 |
| Social media: audiovisual and text | 4.5 |
|  | Social media: text | 3 |
|   | Social media: text and visual | 4.5 |
| Frequency of exposure | Frequently | 9 |
|  | Moderately | 8 |
|  | Occasionally | 6 |
|  | Rarely: not very new or surprising | 1 |
|  | Rarely: very new or surprising | 4 |
| **Content Characteristics** |
| Framing or tone | Gain framing of outcomes | 5 |
|  | Loss framing of outcomes | 4 |
|   | No outcomes presented | 0 |
| Risk information content | Numeric risk information provided | 3 |
|  | Descriptive risk information | 4 |
|  | Narrative risk Information | 7 |
|   | No risk information | 0 |
| **Other Communication Characteristics** |
| Elicits emotion | Positive emotions | 3 |
| Negative emotions | 5 |
|   | No emotions | 0 |
| Recommends concrete actions | Yes | 8 |
| No | 0 |
| Acknowledgement of receipt | Yes | 2 |
|  | No | 1 |
| Number of supporting arguments | Simple (3 or fewer arguments) | 4 |
| Complex (4 or more arguments) | 6 |
| Intended scope of audience | General public | 0 |
|   | Specific audience | 8 |
| Uses norms | Present | 6 |
|   | Not present | 0 |

Source: Expert panel conducted at RTI on May 23–24, 2016.

**Table B3. Information Absorption Score by Demographic Characteristic**

| Characteristic | Attribute | Audience Absorption Score |
| --- | --- | --- |
| Not Targeted | Targeted |
| Age | ≤17 years | −3 | −2 |
|  | 18–44 years | 1 | 2 |
|  | 45–64 years | −1 | 0 |
|   | 65+ years | 0 | 1 |
| Education  | Did not complete high school | −3 | −2 |
|  | High school diploma | 0 | 0 |
|   | Some college or above | 2 | 3 |
| Gender | Male | −1 | −1 |
|   | Female | 1 | 1 |
| Race | White | −1 | 0 |
|  | African American | −2 | −1 |
|  | Native American | −2 | −1 |
|  | Asian | 1 | 2 |
|   | Other non-white | −1 | 0 |
| Hispanic origin | Non-Hispanic | 0 | 0 |
|   | Hispanic | −2 | 0 |
| Intended user of information | Information used directly by consumer | 0 | 0 |
| Information used by pet owner | 0 | 0 |
|  | Information used by health care professional | 0 | 0 |
|  | Information used by caregiver other than a health care professional | 2 | 2 |
| Member of vulnerable population | Pregnant women | 2 | 3 |
| Elderly | 0 | 1 |
|  | Immunocompromised | 3 | 4 |
|   | Not applicable | 0 | 0 |

Source: Expert panel conducted at RTI on May 23–24, 2016.

Table B4. Estimated Spillover Effect by Demographic Group

| Target Audience | Percentage Spillover onto Remaining Consumers |
| --- | --- |
| Minimum | Most Likely | Maximum |
| Gender |
| Male | 0 | 0.25 | 0.75 |
| Female | 0 | 0.2 | 0.5 |
| Race |
| White | 0 | 0.25 | 0.75 |
| African American | 0 | 0.17 | 0.5 |
| Native American | 0 | 0.17 | 0.5 |
| Asian American | 0 | 0.17 | 0.5 |
| Other | 0 | 0.17 | 0.5 |
| **Age** |   |   |   |
| 17 years old or younger | 0 | 0.3 | 0.75 |
| 18–45 years old | 0 | 0.2 | 0.5 |
| 46–64 years old | 0 | 0.2 | 0.5 |
| 65+ | 0 | 0.15 | 0.4 |
| **Ethnic Origin** |   |   |   |
| Hispanic | 0 | 0.17 | 0.5 |
| Not Hispanic | 0 | 0.25 | 0.75 |
| Educational Attainment |   |   |   |
| Did not complete high school | 0 | 0.25 | 0.75 |
| Completed high school | 0 | 0.225 | 0.675 |
| Some college or above | 0 | 0.2 | 0.5 |
| **Member of Vulnerable Population** |   |   |   |
| Pregnant women | 0 | 0.1 | 0.2 |
| Elderly | Same spillover effect as 65+ |
| Immunocompromised | 0 | 0.1 | 0.2 |

Source: Expert panel conducted at RTI on May 23–24, 2016.

1. When compiling the characteristics that would yield the lowest information absorption, the experts indicated the risk communication would use a print ad channel of communication. However, it was later noted that this contradicted the experts’ statement that text newspaper ads have the lowest absorption score (see Appendix Table B2). We believe this was the result of a minor confusion regarding the difference between print ads and newspaper ads. Therefore, we assume for consistency the risk communication that yields the lowest information absorption is communicated through text newspaper ads. [↑](#footnote-ref-1)