Rationing Decisions and Individual Responsibility for Illness: Are All Lives Equal?

Eve Wittenberg, PhD, Sue J. Goldie, MD, MPH, Baruch Fischhoff, PhD, John D. Graham, PhD

Objectives. This survey measured individuals’ rationing allocation choices for situations in which patients are deemed to hold personal responsibility for their diseases and the influence of different arguments on such choices. Methods. The association between allocation decisions for liver disease and asthma and the belief that a patient was responsible for his or her illness was modeled using multivariable regression analysis, controlling for the effect of arguments on choices. Results. In data from 310 returned surveys (45% response rate), respondents were 10 to 17 times more likely to allocate liver transplants or asthma treatment to patients they deemed not responsible for their illnesses than to patients they deemed responsible for their conditions (liver transplants: odds ratio [OR] = 10.3, 95% confidence interval [CI] = 2.5–42.1; asthma: OR = 16.8, 95% CI = 2.1–136.6). Conclusions. Personal responsibility for illness was an important consideration in respondents’ rationing allocation decisions. These choices appeared to be stable although possibly influenced by respondents’ interpretations of the survey scenarios and decision tasks. Key words: rationing; personal responsibility; preferences. (Med Decis Making 2003;23:194–211)

As medical costs rise and the US population ages, the inevitability of health care rationing increases. Although rationing has been attempted in a few settings,1,2 there is still no consensus on if and how to implement allocation rules. To prepare for future allocation decisions, it is important to explore individuals’ opinions about rationing. Moreover, it is important to develop valid methods to elicit such opinions.

Responsibility for illness is 1 possible basis on which to ration resources. “Blame” for illness is currently under debate in the judicial system (e.g., tobacco companies’ v. individuals’ responsibility for illnesses resulting from cigarette smoking). Personal responsibility for risk has been identified previously in the risk perception field as a basis for allocating risk reduction resources.3–10 There is some evidence in the health field to support this notion, including a societal preference for spending more resources to prevent uncontrollable accidents than personally controllable ones,11 for public health programs that address personally uncontrollable health risks over those that are personally controllable,12 and for allocating medical care to patients who are deemed not responsible for their diseases over those who are deemed personally responsible.13–15

The rationing question is complex. Rationing preferences are generally expressed under hypothetical circumstances in the United States, and actual choices

Received 14 August 2001 from the MGH Institute for Technology Assessment, Massachusetts General Hospital, Boston (EW); the Harvard School of Public Health, Boston (SJJ, JDG); and Carnegie Mellon University, Pittsburgh (BP). Presented in part at the 22nd annual meeting of the Society for Medical Decision Making, Cincinnati, Ohio, September 2000. Financial support for this study was provided entirely by a grant from the Decision, Risk, and Management Science Program, National Science Foundation (grant #SES-9975194). The funding agreement ensured the authors’ independence in designing the study, interpreting the data, and writing and publishing the report. The authors are grateful to Joel Tsevat, Peter Ubel, and the anonymous reviewers for comments on earlier drafts of this article. We also thank the individuals who responded to our survey, without whom this research would not have been possible. Revision accepted for publication 14 January 2003.

Address correspondence and reprint requests to Eve Wittenberg, PhD, MGH Institute for Technology Assessment, Zero Emerson Place, Suite 2H, Boston, MA 02114; telephone: (617) 724-4481; fax: (617) 726-9414; e-mail: ewittenberg@mgih-ita.org.

DOI: 10.1177/0272989X03253647

194 • MEDICAL DECISION MAKING/MAY–JUNE 2003
made by individuals can rarely be observed. And because rationing choices in health care inevitably pit 1 person (or group) against another, they raise difficult ethical considerations. The assessment of rationing preferences must thus be a careful process to ensure valid and useful results.

This research sought to elicit societal rationing preferences with regard to personal responsibility for illness. It also attempted to explore the stability of rationing preferences, one of many aspects of the measurement process that may affect responses.

METHODS

The study surveyed a cross-sectional sample of residents of the United States using a written questionnaire. The focus of the survey was a hypothetical scenario in which competing groups of patients were in need of a scarce treatment resource. The patient groups differed on key characteristics that some people believe are evidence of personal responsibility for illness. Respondents were asked to allocate a limited number of medical treatments between the 2 patient groups and to rate whether the respondent believed personal responsibility was at play in the patients’ conditions. Successive allocation questions tested whether respondents’ preferences changed after reading a series of opinions regarding different bases for such allocation decisions. Additional elements explored how well respondents understood the questions posed to them and whether understanding affected the rationing allocation.

Sample

A commercial database of US households (Database America, Woodcliff Lake, NJ) was used to identify a diverse sample. From it, 800 randomly selected, English-speaking adults (>18 years of age) were assigned to 2 groups of 400, each receiving 1 of 2 survey versions. The instrument was mailed in January 2000, including a postage-paid return envelope and a $2 bill; a reminder postcard followed 7 days later. Because the survey met the requirements for exemption from the Federal Policy for the Protection of Human Subjects, approval by an institutional review board was not sought.

Survey Instrument

Hypothetical Scenarios

Two contrasting scenarios were developed: 1) patients in need of liver transplants because of diseases caused by either alcohol consumption or unspecified inherited causes and 2) patients in need of asthma treatment for symptoms caused by either in-the-home air pollution sources or outdoor air pollution. In both scenarios, there was a limited supply of treatment resources, either liver for transplant or doses (pills) of asthma treatment. Patients were described as being similar in all ways except the specific exposure that caused their diseases. Specifically, patients were identical in their medical needs for treatment, prognoses, time with illness, age, health status, number of dependents, medical compliance, and effectiveness of the treatment. The scenarios were pilot tested in face-to-face interviews with volunteers (n = 17) recruited through newspaper advertisements to ensure that they suggested considerations of personal responsibility for illness among respondents (although alcoholism is legally defined as a medical disability under the Americans with Disabilities Act, many individuals assign personal responsibility for resultant liver disease). Two versions of the questionnaire were created, 1 each for the liver transplant scenario and the asthma treatment scenario.

Rationing Allocation Questions

A series of 3 allocation questions were posed. First, respondents were asked to allocate only 1 available liver or dose of asthma treatment between 2 needy patients. Second, they were asked to allocate 100 available livers or asthma treatment doses among a larger number of needy patients. A set of arguments advocating allocation to each group of patients was presented, and then the 100 livers or 100 asthma treatments allocation question was repeated (3rd question). This ordering was intended to test the influence of these arguments on respondents’ preferences. The arguments were elicited from focus groups (2 groups, n = 5 and n = 8) in which participants read each scenario and discussed why each group of patients should or should not receive the treatment. The articulated opinions were compiled and paraphrased for inclusion in the survey instrument, with an equal number for and against each “side,” as well as an argument for allocating resources equally between the 2 groups. The choice of allocating resources equally between the groups was included as a response option in each rationing allocation question. After the final question, respondents were asked to explain their reasoning in their own words. (See the Appendix for the exact question wording of the instrument).

Responses for the 100 treatments allocations questions were coded to reflect the prevalence of 3 types of responses: 1) the available resources should be divided
equally, 2) 1 group should receive them all, and 3) 1 group should receive most but not all of them. Five categories were thus developed: 1) 0:100, 2) 1:99 through 49:51, 3) 50:50, 4) 51:49 through 99:1, and 5) 100:0. The 1st number reflects the number of livers given to patients with disease due to alcohol consumption and the number of asthma treatments given to patients with symptoms due to exposure to in-home air pollution; the 2nd number reflects livers given to patients with inherited liver disease and asthma treatments to patients with symptoms due to outdoor exposures. Categories were excluded or combined when cell counts were insufficient for parameter estimation: the liver transplant scenario elicited no responses in the 51:49 to 99:1 and 100:0 categories; for multivariable analysis of the asthma scenario, the 0:100 and 1:99 to 49:51 categories were combined, and the 51:49 to 99:1 and 100:0 categories were combined. Respondents’ written explanations of their rationing allocations were content analyzed, with categories developed for the range of word phrases appearing in them. Up to 2 different categories were coded for each response.

**Predictors of Allocation Responses**

Constructs borrowed from the risk perception field were used to measure whether respondents attributed personal responsibility for the illnesses to the patients in each scenario. Personal preventability of the illness, personal controllability of the effects of exposure to the risk that led to the illness, and the voluntary nature of the exposure that led to the illness were each assessed. Responses on 5-point, agree-disagree, Likert-type scales were dichotomized, with middle scores interpreted as disagreement. All 3 statements were framed positively (i.e., alcoholism is preventable, controllable, voluntary) to avoid confusion from disagreeing with a negative statement. Responses to the 3 questions were combined into a composite score of personal responsibility for illness (1 = controllable, voluntary, or both; 0 = otherwise) to minimize overlap among the terms and collinearity in the regression models.7–10

Respondents’ understanding of the scenarios was assessed to assist in interpreting the responses.19–21 Questions measured respondents’ acceptance of 2 critical components of each scenario: that the 2 patient groups were equivalent except for the exposure leading to their illnesses and that the interventions (transplant or asthma treatment) were equally effective for both groups of patients. Questions directly asked respondents what they were thinking when they made their rationing allocation decision. A summary “scenario understanding” variable was created (1 = positive answers to both questions, 0 = otherwise). Misinterpretation of these scenario parameters would negate the focus of the rationing allocation on the personal responsibility aspect of the scenario, suggesting that the allocation was made on other grounds, thus creating noise in our results.

We also asked respondents to the liver transplant scenario whether they would want their opinions used in national policy decisions, as a measure of the practicality of their responses (on a 5-point, agree-disagree, Likert-type scale, coded as above). The asthma scenario was deemed too hypothetical to warrant such a question. And the adequacy of the instrument was measured with 3 questions about the understandability of information, the sufficiency of information, and the usefulness of the question format for expressing opinions. The practicality data were used in the multivariable analyses; the instrument adequacy data informed the interpretation of the results.

Gender, age (over age 65 or younger), race (white or nonwhite), education level (up to high school education or beyond), and self and family exposure to the health risks and diseases (combined, either one exposed, or neither) were assessed as potential influences on respondents’ preferences.22,23

**Analysis**

The association between the belief that personal responsibility played a role in illness and rationing preferences for that illness was estimated using multivariable logistic regression analysis. The dependent variable in these models was the rationing allocation. The independent variable of interest was the assessment of personal responsibility for disease. Other covariates included gender, race, education level, age, exposure to the risk or illness, and reported practicality of the response (liver scenario).24 Two types of logistic models were created: 1) ordinal logistic models with the 5 categories of outcomes ordered as 0:100, 1:99 through 49:51, 50:50, 51:49 through 99:1, and 100:0; and 2) multinomial models, with 1 reference category (50:50) and 4 possible outcome categories. For the final analysis, the ordinal logistic models were dropped because the data violated the assumption of proportional odds across the outcome categories (liver scenario, score test: \( \chi^2 = 21.06, 8 \text{ df}, P = 0.007 \); asthma scenario, score test: \( \chi^2 = 77.71, 14 \text{ df}, P = 0.0001 \)).

Four multinomial models were estimated for each scenario, 1) 1 for the rationing allocation before the presentation of the opinion arguments (*prearguments al-

---

* For the proportional odds assumption to hold, the \( P \) value must be nonsignificant for this test.25,26
Table 1  Characteristics of Survey Respondents by Scenario (response rate = 43%)  

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Liver Scenario (%)</th>
<th>Asthma Scenario (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>59.6</td>
<td>56.8</td>
</tr>
<tr>
<td>Age (y)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18–24</td>
<td>4.3</td>
<td>4.0(^a)</td>
</tr>
<tr>
<td>25–34</td>
<td>15.3</td>
<td>16.0</td>
</tr>
<tr>
<td>35–44</td>
<td>25.8</td>
<td>21.6</td>
</tr>
<tr>
<td>45–54</td>
<td>19.0</td>
<td>23.2</td>
</tr>
<tr>
<td>55–64</td>
<td>16.0</td>
<td>7.2</td>
</tr>
<tr>
<td>≥65</td>
<td>19.6</td>
<td>27.2</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>87.0</td>
<td>88.8</td>
</tr>
<tr>
<td>Black</td>
<td>8.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Other</td>
<td>4.4</td>
<td>8.8</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;High school</td>
<td>6.1</td>
<td>11.2</td>
</tr>
<tr>
<td>High school graduate or GED</td>
<td>34.0</td>
<td>27.2</td>
</tr>
<tr>
<td>Some college or graduate</td>
<td>38.9</td>
<td>44.0</td>
</tr>
<tr>
<td>&gt;4-y college</td>
<td>21.0</td>
<td>17.6</td>
</tr>
<tr>
<td>Self or family exposure to risk or illness</td>
<td>65.0</td>
<td>56.0</td>
</tr>
</tbody>
</table>

\(n = 176\) \(n = 134\)

Note: Percentages may not sum to 100 because of rounding. GED = general educational development high school equivalency diploma test.

\(a\) One respondent was <16 years old.

location”), 2) 1 for the rationing allocation that followed the presentation of the opinion arguments (“postarguments allocation”), and for each of these, 3) 1 for all respondents, and 4) 1 for the subset of respondents who met the scenario understanding criteria. Variables that achieved a \(P\) value of \(\leq 0.10\) for all response categories were considered statistically significant. Responses with missing data on the variables included in the models were omitted from the analysis, rather than data imputed.

We also estimated linear models, treating the rationing allocation as a continuous variable. These analyses produced the same conclusions as the logistic models and are not presented. All analyses were conducted using SAS version 6.12.\(^{25}\)

RESULTS

Study Sample

Of the 800 surveys mailed, 72 were returned as undeliverable, 5 because the intended recipient was deceased, and 1 because the recipient did not speak English. Of the remaining 722 surveys, 310 were completed and returned, for a 43% response rate. These included 176 responses to the liver disease scenario and 134 to the asthma scenario (Table 1).

/ Rationing Allocations /

In both scenarios, respondents who believed that alcohol-induced liver disease and asthma caused by in-home air pollution were the result of personal responsibility allocated fewer treatment resources to these patients than to the patients with inherited liver disease and those with asthma related to outdoor air pollution. These rationing allocations changed little from before to after reading the opinion arguments presented in the instrument. In addition, whether respondents understood the scenarios as intended had an effect on responses to the asthma version but not the liver version.

Figures 1 and 2 show the distribution of allocation responses for each scenario for the pre- and post-arguments allocations, for the subset of respondents who 1) believed that alcohol-induced liver disease and asthma caused by in-home air pollution were the result of personal responsibility (72% of liver respondents, 68% of asthma respondents) and 2) understood and correctly interpreted the scenarios (81% of liver respondents, 79% of asthma respondents). In the liver scenario, before reading the opinion arguments, 35% of respondents allocated none of the livers to the patients with alcohol-induced disease and all to the patients with inherited disease (category 0:100), 36% allocated fewer livers to the patients with alcohol-induced disease and more to the patients with inherited disease (1:99–49:51), and 27% allocated the livers equally between the 2 patient groups (50:50). No respondent allocated more than half of the livers to patients with alcohol-related disease. After reading the arguments, the proportions of respondents changed to 33%, 40%, and 27%, for none to patients with alcohol-induced disease, fewer to patients with alcohol-induced disease, and equal distribution, respectively. In the asthma scenario, before reading the arguments, 17% of respondents allocated none of the treatments to patients with asthma symptoms related to home pollution and all to patients with outdoor pollution-related symptoms (0:100), 21% allocated fewer to home-related symptoms and more to outdoor-related symptoms (1:99–49:51), 52% allocated treatments equally to the 2 groups (50:50), 10% allocated more to home-related symptoms (51:49–99:1), and 2% allocated all to home-related symptoms (100:0). After reading the arguments,
Figure 1  Liver transplant scenario: distribution of rationing allocations among respondents who viewed patients with alcohol-induced liver disease as personally responsible for disease and who interpreted the scenario as intended (prearguments responses, n = 97; postarguments responses, n = 96). Black line = prearguments allocations; white line = postarguments allocations.

Figure 2  Asthma scenario: distribution of rationing allocations among respondents who viewed patients with asthma with symptoms caused by in-home air pollution as personally responsible for disease and who interpreted the scenario as intended (prearguments responses, n = 64; postarguments responses, n = 63). Black line = prearguments allocations; white line = postarguments allocations.
the proportions changed to 21%, 23%, 47%, 6%, and 2%, for none, fewer, equal, more, and all to home-related symptoms, respectively.

In the initial allocation question, which asked for the allocation of 1 liver or asthma treatment between 2 needy patients, 2% of respondents favored allocating the liver to the patient with alcohol-induced disease, 66% favored the patient with inherited disease, and 32% felt that both patients were equally deserving. Seventeen percent of asthma respondents favored allocating the 1 treatment pill to the patient suffering from symptoms due to home pollution, 53% favored the patient suffering from outdoor air pollution, and 30% felt both were equally deserving.

**Multivariable Models**

Four models were estimated for each scenario: for allocation responses before and after presentation of the opinion arguments and for all respondents and the subset who interpreted the scenario as intended (Table 2). In the liver scenario, while controlling for other covariates, respondents’ belief that alcohol-induced liver disease was due to personal responsibility was associated with not allocating livers to individuals incurring such risks. This association was consistent in both the prearguments and postarguments responses, as well among all respondents and the subset who interpreted the scenario as intended.

Among all liver respondents, in their prearguments responses, the belief that patients with alcohol-induced liver disease hold personal responsibility for their disease was associated with 9.7 times greater odds (response category 0:100: odds ratio [OR] = 9.7, 95% confidence interval [CI] = 2.8–33.6) of allocating all the livers to patients with inherited disease than allocating them equally among patients, compared with respondents who did not believe personal responsibility played a role in the risk of disease. In their postarguments responses, the belief of personal responsibility was associated with a 10.8 times greater odds (response category 0:100: OR = 10.8, 95% CI = 2.7–42.6) of allocating all livers to the inherited disease group.

Among respondents who interpreted the scenario as intended, deeming patients with alcohol-induced liver disease as responsible for their disease was associated with 12.1 times greater odds in the prearguments responses (response category 0:100: OR = 12.1, 95% CI = 2.9–50.1) of allocating all the livers to patients with inherited disease than allocating them equally among patients. And in these respondents’ postarguments responses, the belief of personal responsibility was associated with an odds ratio of 10.3 (response category 0:100: OR = 10.3, 95% CI = 2.5–42.1) of allocating all the livers to patients with inherited disease.

**Table 2: Multivariable Regression Effect Estimates for Belief That Illness Is Due to Personal Responsibility: Pre- and Postpresentation of Opinion Arguments, All Respondents and Respondents Who Interpreted the Scenarios as Intended**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>All Respondents</th>
<th>Respondents Who Interpreted Scenario as Intended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver transplant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prearguments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response category 0:100</td>
<td>9.7</td>
<td>12.1</td>
</tr>
<tr>
<td>Response category 1:99–49:51</td>
<td>6.5</td>
<td>6.2</td>
</tr>
<tr>
<td>Postarguments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response category 0:100</td>
<td>10.8</td>
<td>10.3</td>
</tr>
<tr>
<td>Response category 1:99–49:51</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Asthma/air pollution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prearguments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response category 0:100</td>
<td>7.3</td>
<td>16.2</td>
</tr>
<tr>
<td>Response category 51:49–100:0</td>
<td>0.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Postarguments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response category 0:100</td>
<td>5.2</td>
<td>16.8</td>
</tr>
<tr>
<td>Response category 51:49–100:0</td>
<td>0.3</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Note: Reference group = response category 50:50. OR = odds ratio; CI = confidence interval.
### Table 3 Rationales Cited for Rationing Allocations

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Respondents</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Liver scenario (n = 155, 21 missing)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favoring equal allocation of livers, or reasons for avoiding allocation task</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;All lives are equal/all should have an equal chance for a transplant.&quot;</td>
<td>51</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>&quot;Making this choice is 'playing God.'&quot;</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>&quot;Age should be the deciding factor.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>&quot;This is not my choice.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>&quot;Livers should be distributed by need.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>Favoring all or majority of livers to patients with inherited disease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholism is voluntary.&quot;</td>
<td>27</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholics are to blame/are responsible for their liver disease.&quot;</td>
<td>23</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholics will keep on drinking.&quot;</td>
<td>11</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholism is a disease.&quot;</td>
<td>11</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>&quot;People can change,&quot; or &quot;people should get a second chance.&quot;</td>
<td>9</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>&quot;Patients with inherited disease have no control over their illness.&quot;</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholism may be inherited also.&quot;</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholics can control their disease.&quot;</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholism affects others in family/household too.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcohol is legal.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>&quot;This will send a message to drinkers.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td>&quot;Alcoholics have families and may be good citizens.&quot;</td>
<td>1</td>
<td>0.6</td>
<td></td>
</tr>
<tr>
<td><strong>Asthma scenario (n = 123, 11 missing)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favoring equal allocation of treatments, or reasons for avoiding allocation task</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;All patients are equal.&quot;</td>
<td>60</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>&quot;The decision depends on the effectiveness of the different drugs.&quot;</td>
<td>7</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>&quot;Both kinds of people live indoors and outdoors.&quot;</td>
<td>3</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>&quot;Outside air gets inside so it doesn't matter.&quot;</td>
<td>1</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>&quot;Issue is irrelevant.&quot;</td>
<td>1</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>&quot;Outdoor air cleans itself so problem disappears.&quot;</td>
<td>1</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Favoring differential allocation of treatments between patient groups:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;People can control indoor air pollution.&quot;</td>
<td>27</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>&quot;People spend more time indoors than outdoors.&quot;</td>
<td>9</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

(continued)

### Table 3 (continued)

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Respondents</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;People can't control outdoor air pollution.&quot;</td>
<td>6</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>&quot;Indoor comfort is more important.&quot;</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>&quot;It's more important to be able to be outdoors.&quot;</td>
<td>2</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>&quot;People can control outdoor air pollution.&quot;</td>
<td>1</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>&quot;People can avoid outdoor air pollution.&quot;</td>
<td>1</td>
<td>0.8</td>
<td></td>
</tr>
</tbody>
</table>

Note: Percentages may not sum to 100 because of rounding.

In the asthma scenario, the association between personal responsibility and rationing allocations was similar before and after reading the opinion arguments but differed between the groups of all respondents and those who interpreted the scenario as intended. Among those respondents who interpreted the scenarios as intended, the belief that patients held personal responsibility for their asthma symptoms resulting from in-home air pollution was associated with approximately 16 times greater odds (response category 0:100—49:51, prearguments question: OR = 16.2, 95% CI = 1.8–145.3; postarguments question: OR = 16.8, 95% CI = 2.1–136.6) of allocating more treatments to sufferers of outdoor air pollution compared with respondents who thought otherwise. This association was significant but smaller among all respondents (prearguments question, OR = 7.3, 95% CI = 1.3–34.6; postarguments question, OR = 5.2, 95% CI = 1.4–19.4). The allocation of more treatments to the in-home pollution sufferers was approximately 70% less likely among respondents who assigned personal responsibility to these patients, but this association was only marginally significant among the subset who correctly interpreted the scenario. Complete multivariable model results are available from authors.

**Justifications for Rationing Allocations**

Respondents offered 17 (liver) and 14 (asthma) distinct reasons for their allocation decisions (Table 3). The most frequent reason cited in both scenarios was that all lives or patients were equally valuable (33% of liver respondents and 47% of asthma respondents). The 2 main reasons for allocating livers to patients with inherited disease were “alcohol consumption is voluntary” (17%) and “alcoholics are responsible for their ill-
ness" (15%). The main reason for allocating asthma treatments to patients suffering from symptoms caused by outdoor air pollution was that people could control in-home air pollution (21%), with an additional 5% writing that people could not control outdoor air pollution.

**DISCUSSION**

Our results provide evidence that preferences to ration health care on the basis of considerations of personal responsibility exist, in both a previously identified disease scenario (liver transplantation based on disease caused by alcohol consumption) and a previously unidentified disease scenario (asthma related to air pollution from different sources). The comparison of disease scenarios suggests that personal responsibility for illness may be an independent consideration in rationing decisions, separate of the disease involved. In addition, rationing preferences may be sufficiently formed that others' opinions have little influence over them. Our respondents did not change their rationing decisions much when faced with others' arguments about how to make the allocations. And finally, the survey methods commonly used to elicit opinions about rationing are subject to respondents' misinterpretations, which may affect results. Studies using hypothetical scenarios in which respondents are asked to make difficult choices should therefore ensure that respondents understand the survey task and respond to the intended questions or assess if and when misinterpretation occurs.

Our asthma and air pollution scenario has not previously been used to assess the relationship between personal responsibility for illness and rationing decisions. This scenario is distinguished from previously studied diseases related to personal responsibility in its relative unfamiliarity to respondents and its focus on morbidity instead of mortality. There is no literature on public preferences regarding asthma treatment and air pollution causes, although current US policy provides more funding for reducing outdoor air pollution, despite evidence that indoor air pollution poses a greater risk to human health. Our respondents' mixed views regarding the role of individual responsibility in sources of air pollution perhaps reflect this unfamiliarity. In addition, we might expect that rationing decisions for life-saving interventions would differ from those for interventions that treat symptoms, and in fact, we found a slightly greater willingness to ration treatment resources away from patients with asthma who were deemed personally responsible for their symptoms compared to similarly viewed patients with liver disease. This distinction was mentioned anecdotally in pilot tests of the scenarios and would benefit from further investigation.

Our liver transplant results confirm previous studies. Alcohol use has been specifically identified as a reason for not deserving a liver transplant in a survey of the general public, and the personal responsibility aspect of alcohol use has been identified as the rationale for not allocating transplants to patients with alcoholic cirrhosis. Public preferences for allocating liver transplants on considerations of personal responsibility for illness are echoed in advocacy within the medical community but not in current organ allocation policies. Our results from both scenarios are consistent with risk studies showing that involuntary and uncontrollable risks are less acceptable and their reduction more highly valued than voluntary and controllable risks.

Well-informed preferences that reflect thoughtful, considered opinions are arguably the best inputs for policy decisions. Our survey attempted to produce thoughtful rationing decisions by encouraging respondents to consider a variety of viewpoints. Our design investigated the stability of allocation choices by attempting to sway preferences with these viewpoints. We found little change in the allocation decisions made after reading arguments compared to before reading them. Although it is possible that our design precipitated anchoring on previous responses, we believe that this result indicates that our responses were considered and reflective and relatively stable.

Hypothetical scenarios are commonly used in preference assessment surveys, including utility elicitation and contingent valuation (i.e., willingness to pay). By definition, such methods are abstract processes, which may be cognitively difficult for some subjects. Moreover, like utilities and willingness-to-pay valuations, rationing allocation choices are often morally or ethically difficult decisions for individuals to make. Research has found that people tend to avoid such decisions by misconstruing information to make the decision easier or the task simpler. Our survey addressed this issue in 2 ways: We endeavored to simplify the decision task by providing background and clarifying information about the scenario and the choice, and we attempted to measure respondents' interpretations of the scenarios after the rationing choices had been made to decipher whether their interpretations were consistent with our intention.

Our results showed that some people did misconstrue the scenarios, intentionally or unintentionally, yet this affected responses only to the asthma version. Others have shown that framing effects (the ability of
presentation style, wording, or details to affect preferences) are more often observed in unfamiliar tasks.\textsuperscript{34} It is possible that responses to the asthma version, because it was less familiar, were less stable and more easily influenced by arguments. On the other hand, avoidance might be at work in the liver scenario because it involved mortality and not morbidity, but we found these responses unaltered by the arguments. Regardless, we believe that it is important to assess the degree to which respondents understand and correctly interpret the hypothetical scenarios and difficult ethical choices often presented in preference assessment surveys to correctly interpret results.

There are several caveats that should be considered in evaluating our results. Primary among these is the use of surveys to assess preferences. Policy decisions should be based on people’s true opinions, which are best reflected in actual choices made by individuals. Unfortunately, health care rationing is not easily measured through revealed choices, and survey results such as ours are by necessity an imperfect substitute that may or may not mirror actual preferences. Second, as mentioned above, our design to assess the influence of opinion arguments on choices may have introduced anchoring into our results. By answering successive allocation questions, respondents may have anchored their decisions on early responses and been less willing to consider new information than they might have been had they not expressed previous decisions. Also, by explicitly encouraging respondents to consider the issue of personal responsibility for disease, we may have enhanced the importance of this factor compared to other factors considered in rationing decisions. Although we did not find any evidence of such trends in focus groups or pilot tests, they may have emerged when respondents completed the survey at home. Finally, the generalizability of our results is limited by the disease contexts and the respondent population. As with previous studies, we found that the magnitude of preferences varied across contexts, although the general pattern was similar in each.\textsuperscript{18,23,35} Clearly, replication with additional contexts would be useful. And although respondents were sampled randomly from a national database, it is possible that individuals with particular interests in these contexts were disproportionately likely to respond. We have no independent evidence on nonresponders’ values regarding personal responsibility, and our multivariable analyses controlled for known respondent characteristics that may have influenced preferences. Nonetheless, a population-representative sample is needed to draw population conclusions.

In conclusion, personal responsibility for illness, or the belief that such responsibility exists, may be an important consideration for some in questions of allocating scarce health care resources. Such opinions may play a role in the rationing debate, regardless of their moral validity or desirability. Whether such opinions are immutable or potentially influenced by competing arguments is a subject for further inquiry. The stability of preferences in the face of countervailing arguments is an indication of their connection to basic values unrelated to the specifics of the situation. And clearly, such decisions are complicated and potentially uncomfortable for individuals to grapple with and resolve. Efforts to assess preferences to guide individual or policy decisions should assist individuals in this decision process and evaluate responses in light of the success of the elicitation process.
RATIONING AND INDIVIDUAL RESPONSIBILITY

APPENDIX
HARVARD HEALTH AND SAFETY OPINION SURVEY

The topic is LIVER TRANSPLANTS

Today more people need livers than there are livers available for transplants. Many people are now debating what criteria to use in deciding which patients will get liver transplants.

We would like to know your personal opinion about how donated organs should be distributed to patients in need. Please read this background information and then answer the questions that follow.

This is Background Information:

MEDICAL INFORMATION ON LIVERS
(1) The liver is needed for digesting and storing food. It also detoxifies chemicals that enter the body.
(2) The liver can be damaged by viruses, inherited factors, cancer, and drinking alcohol. There are other causes as well, not all of them understood.
(3) Most liver disease can be treated with medicine. However, if the damage to the liver is severe enough, a liver transplant is needed.

TRANSPLANT INFORMATION
(1) About 3,500 transplants are performed every year. However, another 500 people die while waiting for a liver to become available.
(2) Three factors are currently used in setting priorities for giving patients livers. A patient is more likely to get a liver if:
   • the donated liver matches the patient’s body (which increases the chance of success);
   • the patient badly needs the liver in order to stay alive;
   • the patient has been on the transplant waiting list for a long time.
(3) People who are alcoholics cannot get a transplant unless they stop drinking.
(4) About two-thirds of people who have the operation survive, and they live a normal life for many years.

Please think about this Choice:

Should the CAUSE of a person’s liver disease be considered when deciding whether they should receive a transplant?

Imagine that you are a hospital administrator who had just received a donated liver. Now, you have to choose between two patients who are both waiting for transplants. Each will die without an immediate transplant. Would you give it to

Patient 1, whose liver disease was caused by years of drinking alcohol

OR

Patient 2, whose disease was caused by an inherited factor?

Imagine that these two patients are EXACTLY THE SAME IN ALL WAYS:
• the liver matches them equally well,
• they have the same amount of time to live before they’ll die if they don’t get a transplant,
• they have been on the waiting list for the same length of time,
• they are the same age,
• they are equally healthy,
• they have been equally successful in following their medicine routines,
• they have the same number of family members who depend on them,
• they have the same chance of surviving the transplant operation and will live the same number of years afterwards,
• the operation would cost the same for each.

The ONLY difference between the 2 patients is that
• Patient 1 has severe liver disease caused by many years of heavy alcohol drinking. He no longer drinks alcohol.
• Patient 2 has severe liver disease caused by an inherited factor that shows up in middle age. He does not drink alcohol.

QUESTION #1: Which patient would you give the liver to? (check one)

I would give the liver to

——— Patient 1, whose liver disease was caused by many years of heavy alcohol drinking
——— Patient 2, whose liver disease was caused by an inherited factor
——— Either one. The cause of their disease does not matter in my decision.

UTILITY ASSESSMENT AND DECISION PSYCHOLOGY
QUESTION #2: How strongly do you feel about the choice you just made? (circle one number)

Very strong——1 2 3 4 5——Very weak

QUESTION #3: Now please imagine that you have 100 livers available for transplants, and many patients on the waiting list. Considering just patients like the two described above, how would you divide these 100 livers between these two types of patients?

Assume that there are many more patients of both types than available livers, and that all patients who do not get transplants will die soon. How many of the 100 livers would you give to each type of patient? Write the numbers on the lines below. The two numbers must add up to 100.

I would give

- Livers to patients with disease caused by years of drinking alcohol.

  (number)

- Livers to patients with disease caused by an inherited factor.

  (number)

100 Livers total

Now please read some opinions that other people have about this issue.
After you have a chance to read them and think some more about this topic, we will ask you the same question again.

Arguments for giving livers to people whose liver disease is caused by DRINKING ALCOHOL:
- “Alcoholism is a disease. People should not be blamed for its health consequences any more than for any other disease.”
- “Alcoholics may be good citizens and contribute much to society despite their alcoholism.”
- “Alcohol is a legal substance. We shouldn’t punish those who drink.”

Arguments for giving livers to patients whose liver disease is caused by an INHERITED FACTOR:
- “People with problems caused by inherited factors are not personally responsible for their health problems related to these factors.”
- “The decision to drink alcohol is a personal choice, and people should take responsibility for their choices.”
- “There is enough information out there for people to know the risks of drinking. If they caused health problems to themselves, they knew what they were doing.”

Argument for giving the same number of livers to both types of patients:
- “All patients’ lives are equally valuable, regardless of what caused their disease.”

After reading these opinions and having more time to think, please answer this question again.
Feel free to give the same answer as before if you feel the same, or give a different answer if your feelings have changed.

QUESTION #4: How many of the 100 livers would you give to each type of patient? Write the numbers on the lines below. The two numbers must add up to 100.

I would give

- Livers to patients with disease caused by years of drinking alcohol.

  (number)

- Livers to patients with disease caused by an inherited factor.

  (number)

100 Livers total

QUESTION #5: Please explain why you divided the 100 livers the way you did. (please write clearly)

QUESTION #6: Please indicate whether you agree or disagree with the arguments that were given above about which patients should get the livers. (Circle one number under each statement)

(a) “Alcoholism is a disease. People should not be blamed for its health consequences any more than for any other disease.”

Agree 1 2 3 4 5 Disagree
(b) "Alcoholics may be good citizens and contribute much to society despite their alcoholism."

   Agree  1  2  3  4  5  Disagree

(c) "Alcohol is a legal substance. We shouldn’t punish those who drink."

   Agree  1  2  3  4  5  Disagree

(d) "People with problems caused by inherited factors are not personally responsible for their health problems related to these factors."

   Agree  1  2  3  4  5  Disagree

(e) "The decision to drink alcohol is a personal choice, and people should take responsibility for their choices."

   Agree  1  2  3  4  5  Disagree

(f) "There is enough information out there for people to know the risks of drinking. If they caused health problems to themselves they knew what they were doing."

   Agree  1  2  3  4  5  Disagree

(g) "All patients’ lives are equally valuable, regardless of what caused their disease."

   Agree  1  2  3  4  5  Disagree

QUESTION #7: For me personally, the background information on transplants (on p. 1) was clear and understandable.

   Agree  1  2  3  4  5  Disagree

QUESTION #8: I had enough information to think about the distribution questions fully and make up my mind about them.

   Agree  1  2  3  4  5  Disagree

QUESTION #9: I was able to fully express my opinions about these issues.

   Agree  1  2  3  4  5  Disagree

QUESTION #10: People can avoid becoming alcoholics.

   Agree  1  2  3  4  5  Disagree

QUESTION #11: Alcoholics who currently drink can control whether they suffer health problems due to their alcoholism.

   Agree  1  2  3  4  5  Disagree

QUESTION #12: Being an alcoholic is voluntary.

   Agree  1  2  3  4  5  Disagree

QUESTION #13: When you thought about the two types of patients, did you believe that they were exactly the same EXCEPT FOR the condition that caused their liver disease? Or did you believe that they were different in some other way?

   _______ the same [1] _______ different [2]

   If you believed that they were different, answer the next 2 questions:

   (1) Please describe how they differed:
(2) Did this difference matter in your decision about dividing the livers?


QUESTION #14: When you thought about the two types of patients, did you think that those who did NOT receive a liver transplant would die as a result?


QUESTION #15: I want my opinion about dividing the 100 livers considered by those who set U.S. policy.

Agree 1 2 3 4 5 . Disagree

Please remember that this survey does not have your name or any information that identifies you on it.

QUESTION #16: Are you male or female?


QUESTION #17: How old are you?


QUESTION #18: How would you describe your race? (check all that apply)


QUESTION #19: What is the highest grade or level of school that you have completed?

Some high school or less [1]  High school graduate or GED [2]  College (some or 2-year or 4-year degree) [3]  More than 4-year college degree [4]

QUESTION #20: Are you or have you ever been an alcoholic?


QUESTION #21: Do you have a family member or close friend who is or has ever been an alcoholic?


Thank you for participating!

Please return the survey to us in the envelope provided (no stamp needed).
RATIONING AND INDIVIDUAL RESPONSIBILITY

HARVARD HEALTH AND SAFETY OPINION SURVEY

The topic is ASTHMA & AIR POLLUTION

People with asthma can get “asthma attacks” from many things, including air pollution. Both outdoor and in-the-home air pollution cause these attacks. People thinking about ways to control asthma are discussing which type of air pollution is more important to reduce. We would like to know your personal opinion about whether in-the-home or outside air pollution is more important to reduce for people who have asthma.

Please read this background information and then answer the questions that follow.

This is Background Information:

ASTHMA
1. Asthma is a disease that causes swelling in the airways that carry air into and out of the lungs.
2. Over 13 million people in the United States have asthma.
3. People who have asthma can have many types of breathing problems. These include coughing, wheezing, shortness of breath and chest tightness.
4. People who have asthma are super-sensitive to things that do not bother other people. These things are called “triggers”.
5. Asthma triggers vary from person to person but may include indoor things like dust, second-hand smoke, household sprays and chemicals, and paint. Triggers can also be outdoor things like diesel engine fumes and smoke from factories.
6. When people with asthma are near their triggers they have trouble breathing. It may hurt when they breathe, and in severe cases they may have to go to the hospital.

AIR POLLUTION
1. In-the-home air pollution can be asthma triggers for some people. In-the-home air pollution comes from things like:
   - dust,
   - second-hand cigarette smoke,
   - household cleaning products, air fresheners, and insect sprays,
   - not enough air flow in homes (from windows, air vents, and exhaust fans).
2. Outdoor air pollution can also be asthma triggers for some people. Outdoor air pollution comes from things like:
   - exhaust from cars, trucks and buses,
   - fumes from dry cleaners,
   - smoke from factories and power plants.

Please think about this choice:

Which kind of breathing problems are more important to get rid of—problems from in-the-home air pollution or from outdoor air pollution?

Imagine that you are the director of a health clinic and you have a new asthma drug that you can give to ONE patient. You have only one pill of this drug and it cannot be shared. One pill gets rid of all breathing problems for a full year. Which patient would you give it to?

Patient 1, whose breathing problems are triggered ONLY by in-the-home air pollution
OR
Patient 2, whose breathing problems are triggered ONLY by outdoor air pollution?

Imagine that these two patients are EXACTLY THE SAME IN ALL Ways:
- they have trouble breathing equally often,
- their difficulty breathing is equally bad,
- they have had asthma for the same length of time,
- they are the same age,
- besides their asthma, they are equally healthy,
- they both spend the same amount of time at home and outdoors,
- the pill works equally well for both of them.
The ONLY difference between the 2 asthma patients is that
- Patient 1's breathing problems are triggered only by in-the-home air pollution.
- Patient 2's breathing problems are triggered only by outdoor air pollution.

QUESTION #1: Which patient would you give the pill to? (check one)

I would give the pill to

_____ Patient 1, whose breathing problems are triggered by IN-THE-HOME air pollution
_____ Patient 2, whose breathing problems are triggered by OUTDOOR air pollution
_____ Either one. What triggers their breathing problems does not matter in my decision.

QUESTION #2: How strongly do you feel about the choice you just made? (circle one number)

Very strong——1 2 3 4 5——Very weak

Now please imagine that you have 100 pills of the new asthma drug. One pill is enough for each patient for one full year. Since it's a new drug, only 100 pills are available now. You must decide who to give it to.

QUESTION #3: Assume that there are many asthma patients of both types who need this drug. Anyone who does not get it will keep having breathing problems for the year. How many of the 100 pills would you give to each kind of patient? Write the numbers on the lines below. The two numbers must add up to 100.

I would give

_____ pills to the patients whose breathing problems are triggered only by IN-THE-HOME air pollution.

(number)

_____ pills to the patients whose breathing problems are triggered only by OUTDOOR air pollution.

(number)

100 pills total

Now please read some opinions that other people have about this issue. After you have a chance to read them and think some more about this topic, we will ask you the same question again.

Arguments for giving pills to patients whose breathing problems are triggered only by IN-THE-HOME air pollution:
- "People spend more time inside than outside."
- "Homes are small and the air pollution is concentrated inside. Outside the wind blows pollution away."

Arguments for giving pills to patients whose breathing problems are triggered only by OUTDOOR air pollution:
- "No one can avoid outdoor air pollution except by staying inside all the time."
- "People can control pollution in their home. Only they suffer from it. It's hard for one person to control the pollution outside."

Argument for giving the same number of pills to both kinds of patients:
- "All people's health and comfort are equally important. It doesn't matter whether they're suffering from in-the-home or outdoor air pollution."

After reading these opinions and having more time to think, please answer this question again. Feel free to give the same answer as before if you feel the same, or give a different answer if your feelings have changed.
RATIONING AND INDIVIDUAL RESPONSIBILITY

QUESTION #4: How many of the 100 pills would you give to each kind of patient? Write the numbers on the lines below. The two numbers must add up to 100.

I would give

_____ pills to the patients whose breathing problems are triggered only by IN-THE-HOME air pollution.

_____ pills to the patients whose breathing problems are triggered only by OUTDOOR air pollution.

100 pills total

QUESTION #5: Please explain why you divided the 100 pills the way you did. (please write clearly)

QUESTION #6: Please indicate whether you agree or disagree with the arguments that were given above about which patients should be given the pills. (Circle one number under each statement)

(a) “People spend more time inside than outside.”

Agree  1  2  3  4  5  Disagree

(b) “Homes are small and the air pollution is concentrated inside. Outside the wind blows pollution away.”

Agree  1  2  3  4  5  Disagree

(c) “No one can avoid outdoor air pollution except by staying inside all the time.”

Agree  1  2  3  4  5  Disagree

(d) “People can control pollution in their home. Only they suffer from it. It’s hard for one person to control the pollution outside.”

Agree  1  2  3  4  5  Disagree

(e) “All people’s health and comfort are equally important. It doesn’t matter whether they’re suffering from in-the-home or outdoor air pollution.”

Agree  1  2  3  4  5  Disagree

QUESTION #7: For me, the background information on asthma and air pollution (on pp. 1-2) was clear and understandable.

Agree  1  2  3  4  5  Disagree

QUESTION #8: This survey gave me enough information to fully think about who to give the pills to.

Agree  1  2  3  4  5  Disagree

QUESTION #9: The questions allowed me to fully express my opinions about this issue.

Agree  1  2  3  4  5  Disagree

QUESTION #10: People can personally control the amount of air pollution in their home.

Agree  1  2  3  4  5  Disagree

QUESTION #11: People can personally control the amount of outdoor air pollution in their town or city.

Agree  1  2  3  4  5  Disagree
QUESTION #12: People can personally control whether they suffer health problems from breathing IN-THE-HOME air pollution.

<table>
<thead>
<tr>
<th>Agree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Disagree</th>
</tr>
</thead>
</table>

QUESTION #13: People can personally control whether they suffer health problems from breathing OUTDOOR air pollution.

<table>
<thead>
<tr>
<th>Agree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Disagree</th>
</tr>
</thead>
</table>

QUESTION #14: It is a voluntary choice to be around IN-THE-HOME air pollution.

<table>
<thead>
<tr>
<th>Agree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Disagree</th>
</tr>
</thead>
</table>

QUESTION #15: It is a voluntary choice to be around OUTDOOR air pollution.

<table>
<thead>
<tr>
<th>Agree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Disagree</th>
</tr>
</thead>
</table>

QUESTION #16: When you were making your decision about who to give the new asthma pills to, did you think the pill could get rid of breathing problems equally well for both types of asthma patients?

_______ Yes [1] __________ No [2]

QUESTION #17: When you were making your decision about who to give the new asthma pills to, did you think that both types of patients were the same in ALL ways EXCEPT what triggers their breathing problems?

_______ Yes [1] __________ No [2]

Please remember that this survey does not have your name or any information that identifies you on it.

QUESTION #18: Are you male or female?

_______ Male [1] __________ Female [2]

QUESTION #19: How old are you?

<table>
<thead>
<tr>
<th>Age Group</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>18-24 years</td>
<td>[1]</td>
</tr>
<tr>
<td>25-34 years</td>
<td>[2]</td>
</tr>
<tr>
<td>35-44 years</td>
<td>[3]</td>
</tr>
<tr>
<td>45-54 years</td>
<td>[4]</td>
</tr>
<tr>
<td>55-64 years</td>
<td>[5]</td>
</tr>
<tr>
<td>65 years or older</td>
<td>[6]</td>
</tr>
</tbody>
</table>

QUESTION #20: How would you describe your race? (check all that apply)

Black/African American [1]
White [2]
Hispanic [3]
American Indian or Alaskan Native [4]
Asian or Pacific Islander [5]
Other [6]

QUESTION #21: What is the highest grade or level of school that you have completed?

Some high school or less [1]
High school graduate or GED [2]
College (some or 2-year or 4-year degree) [3]
More than 4-year college degree [4]
RATIONING AND INDIVIDUAL RESPONSIBILITY

QUESTION #22: Do you have asthma?

______ Yes [1] _______ No [2]

QUESTION #23: Do you have a family member or close friend who has asthma?


Thank you for participating!

Please return the survey to us in the envelope provided (no stamp needed).

REFERENCES


UTILITY ASSESSMENT AND DECISION PSYCHOLOGY