Rappporteurs' Notes for Valuing Statistical Lives

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The Value of a Statistical Life discussion centered around four primary themes: limitations of the current VSL approaches used by the various agencies, ideal measures of VSL, applications in a regulatory setting and future research needs.

The breakout session was attended by 18 participants, some of whom were not necessarily familiar with foodborne illnesses and the nature of these illnesses. The session therefore began with a brief discussion of the types of foodborne risks, the nature of the ensuing illnesses, and the populations with greatest mortality risk. This was followed by a recap of the approaches taken by the various agencies in valuing fatal risks. Generally, EPA separates the morbidity period from the mortality endpoint and values each separately. Premature mortality is valued at $5.8 million (1997 dollars) regardless of age, health status, etc., while the morbidity period is generally valued using cost-of-illness numbers in the absence of willingness-to-pay values. The VSL figure used by EPA is based on a summary of 26 studies that estimate VSL (primarily labor market studies). FDA uses a value of $5.0 million, based on similar studies.

The use of a single value for mortality risk valuation was recognized as one of the most significant limitations of the VSL numbers currently in use by the agencies. These values are not illness specific and, since they are based primarily on labor market studies as noted above, are based on values for reductions in risks of accidental (relatively immediate) deaths. Deaths associated with foodborne illness on the other hand are sometimes preceded by extended and often painful periods of morbidity. While some participants argued that, in many cases, analysts could value the morbidity period separately from the mortality endpoint, there was general concensus that cancers should be treated as a separate class of illness. It was recognized that cancers generally have an lengthy morbidity period, are often fatal, and have a large "dread" factor associated with them that in all likelihood would affect willingness to pay to reduce cancer risk.

Another serious limitation of the current values used by the agencies is that they are derived from studies of prime-aged males with an average age of 40 years. In the case of foodborne illness, however, the exposed population most susceptible to mortality risks are children and the elderly. It is not clear that the VSL values currently in use are appropriate to value risk reductions to these subpopulations with such disparate ages.

Yet another concern identified by the group involved benefit transfer. When VSL values are derived from survey results or even hedonic wage studies, the risks are treated as certain and of a given magnitude. The resulting VSL numbers are transferred to scenarios where the magnitude

of the risk is often very uncertain given the nature of the risk assessment. This uncertainty could have serious implications for VSL.

Given the limitations of the current values, the group agreed that ideally specific values should be developed; however, there was some discussion as to whether it was most appropriate to value health endpoints or specific reductions in exposure, involving specific populations and ranges of risk levels. It was also recognized that specific values, regardless of whether they were for specific illnesses or reductions in specific contaminants, would be very costly to obtain. A concensus was eventually reached that specific values for reductions in cancer risk should be developed.

The remainder of the discussion centered around identifying priorities for future research in the short, medium, and long term. In order to avoid duplicated efforts, it was noted that agencies sponsoring or engaging in mortality risk valuation research should at the very least make abstracts of funded research projects available to the public. The agencies involved should also consider jointly funding some of projects as well as working with the EPA/NSF grant program. A number of projects were identified that could make better use of existing information as well as expanding the information available for economic analyses of food safety regulations. Research goals are categorized below by the time necessary to realize results.

Short term (1 to 2 years):

1. *Determine which foodborne illnesses pose the greatest mortality risk*
   In order to focus future mortality risk valuation studies, it will be important to identify which foodborne illnesses create the greatest mortality risk to the population. It will also be important to identify the characteristics of the illnesses in question, such as length of morbidity period, symptoms, age distribution of those affected, etc.

2. *Revisit mortality risk valuation literature*
   EPA and other agencies rely on various combinations of 26 VSL studies, including examples of hedonic wage and contingent valuation approaches, identified by Viscusi (1992) as Ahigh quality.@ Since the publication of Viscusi=s review article however, other studies may have been completed that could be relevant to mortality risk valuation from a food safety context, while others may since have been deemed inappropriate for various reasons. The mortality risk valuation literature should be revisited with the aim of identifying the most relevant high-quality studies for food safety risk valuation. Prior to completing this task, a general understanding should be reached regarding the definition and desirable characteristics of Ahigh-quality@ studies.

3. *Rework existing data*
   Economists should follow the lead of epidemiologists and allow other researchers to attempt to replicate results using available data. Some of the heavily cited VSL studies were completed 5 to 10 years ago. While many of the mortality risk valuation studies were completed using publicly available data, the datasets from which these data were compiled are large and cumbersome to use. Researchers should attempt to obtain access to previously utilized data to reanalyze them and to determine whether VSL figures vary according to sample characteristics, sub-sample of focus, etc.

4. *Explore more refined ways to aggregate studies*
   In addition to reworking the existing data, researchers should explore more refined ways of aggregating results from existing studies through meta-analysis and other techniques. In order to accomplish more meaningful aggregations, it will be necessary to obtain more detailed information on the age distribution of individuals included in each study as well as other socio-demographic characteristics, details regarding estimation approaches and data-cleaning techniques.

5. *Pilot Experimental Studies for Calibration of VSL*
   Using a relatively small sample of respondents, calibration factors for VSL figures can be developed by observing risk-averting behaviors in some detail. Using the observed behaviors, researchers can calculate an implicit VSL and accompanying calibration factors for extrapolation to a larger population.

Medium Term (2 to 3 years):

1. *Expanded Experimental Studies*
   Conditional on the relative success of the pilot studies, expanded experimental studies should be considered for calibration of VSL values. These expanded studies may combine market research data (brands purchased, quantity purchased, etc.) with experimental approaches.

2. *Revisit Benefit-Cost Analysis of Selected Regulations*
   Using the improved VSL figures derived in studies described above, the economic analysis for several regulations should be revisited in order to determine the effect of the updated estimates on the outcomes of the analyses.

Long term (more than 3 years):

More VSL studies need to be conducted with the aim of answering a number of specific questions:

1. *Does the contingent valuation method yield similar results to those from a revealed preference study?*
   A paired CVM and revealed preference study should be conducted in which the same good is the focus of each. The results should from the two approaches should then be compared.

2. *How does VSL vary by cause of death?*
   It is generally thought that VSL may be affected by various factors associated with the illness considered. For instance, the higher the amount of dread associated with the illness, the higher the willingness to pay to avoid the illness. Cancer, for instance, is one category of fatal illness thought to carry a high dread level. Other illnesses may be similarly positioned and other factors may have similar effects on willingness to pay. Researchers should conduct studies that focus on mortality by specific causes to gauge the effect of illness specific mortality on VSL.

3. *How does VSL vary across socio-demographic characteristics?*

In cases where a specific sub-sample of the population is more susceptible to the risk in question than the rest of the population, it is important to gauge how VSL varies by specific characteristics of the population. Age is a potentially important characteristic in this regard as is income. In the context of foodborne illnesses, children and the elderly are more susceptible to mortality risks than middle-aged and young adults. While some analysts advocate adjusting VSLs according to the number of life-years remaining for specific sub-groups of the population, there is no empirical evidence to date indicating that the value of a statistical life year is constant across the life span of an individual. Furthermore, almost no information exists on the value of a statistical child=s life.

4. *How does VSL vary across different risk sources?*
   As mentioned above, most of the VSL studies used by agencies to value health risks are labor market studies. Researchers should determine whether the source of the risk (such as foodborne risks versus labor market risks) affects willingness to pay.

5. *How does the nature of the risk affect valuation?*
   Even if the vehicle of exposure is the same, other aspects of the risk may affect willingness to pay such as whether the risk is manmade or whether it occurs naturally in the environment.

6. *How does altruism affect VSL?*