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The current debate over cost-benefit concerns in agencies’ evaluations of government regulations is not so much whether to consider costs and benefits at all but rather what belongs in the estimated costs and benefits. Overlaid is the long-standing belief that the distribution of costs and benefits needs some consideration in policy evaluations. In a recent article in the University of Chicago Law Review, Robert Frank and Cass Sunstein proposed a relatively simple method for adding distributional concerns to policy evaluation that enlarges the typically constructed estimates of the individual’s willingness to pay for safer jobs or safer products. One might pay more for safety if it were the result of a government regulation that mandated greater safety across-the-board. Frank and Sunstein argue that the reason for enlarging current estimates is that someone who takes a safer job or buys a safer product gives up wages or pays a higher price, which then moves him or her down in the ladder of income left over to buy other things. Alternatively, a worker who is given a safer job via a government regulation will have no relative income consequences if all workers have lower pay. We show that when considering the core of the Frank and Sunstein proposal carefully one concludes that current regulatory evaluations should be left alone because there is no reason to believe that relative positional effects can be well identified quantitatively, are important to personal decisions in general, or are important to well constructed cost-benefit calculations of government regulations.

One of the practical problems with trying to consider relative position of income and consumption when estimating willingness to pay is that there is no unique way to ascertain from a statistical model the person’s actual social reference group. A researcher must specify ex ante a reference group and then net out the behavioral effects of a possibly incorrectly attributed reference group’s behavior on the individual. There

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is no well-established result from survey data for a typical person's economic reference group. Moreover, the econometric literature generally finds that reference group or social interaction effects are unlikely to be identified uniquely or are small and easily ignored, perhaps because the relative positional effects of workplace or product safety offset possible reference group effects on income.

To some extent Frank and Sunstein's recommended increase in the value of willingness to pay for safety used in current regulatory evaluations is already considered. Regulatory evaluations often include a pessimistic and an optimistic value of likely benefits, and Frank and Sunstein's suggested revised value of willingness to pay is still below the optimistic case that carefully formulated cost-benefit studies use. It is easy to show that almost doubling the estimated value of a statistical life would have an inconsequential effect on the economic desirability of a broad set of regulatory policies.

Finally, we argue that the most important refinements one could make in the area of regulatory evaluation would be for agencies involved to adhere more to the framework of what is generally considered a carefully done cost-benefit study and for agencies to make greater actual use of appropriately done cost-benefit studies when recommending regulations.

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Introduction

An exciting recent development in cost-benefit evaluation of policy is the issuance of so-called prompt letters by the Office of Information and
Relative Economic Position

Regulatory Affairs ("OIRA") of the White House Office of Management and Budget ("OMB").

OIRA's prompt letters, which are made public, have openly encouraged agencies such as the Food and Drug Administration and the Occupational Safety and Health Administration to explore specific regulations that OIRA believes may be cost beneficial, such as possibly requiring automatic external defibrillators in the workplace. Success of prompt letters and other efforts to reform the regulatory process will ultimately depend on how one values the benefits and costs of regulations. Robert Frank and Cass Sunstein propose an increase in benefit estimates used to value lives in regulatory studies, such as the ones OIRA seeks to foster. They advocate enlarging benefit calculations, as current practice does not account for the role of people's concerns over their relative economic position in society. We argue against replacing the current approach to valuing risks to life and health because pinning down the importance of relative position is statistically impracticable, because there is little evidence that relative position is important to individual choices, and because, even if relative position were important to individual decisions, policy decisions involving cost-benefit calculations would remain largely unchanged.

In the absence of explicit legislative prohibition, a comparison of costs to outcomes, coupled with economic balancing, is now the default standard when formulating a new government regulation. Cost-outcome balancing means weighing the policy's benefits and costs to make sure that the costs are not greater than the benefits. Although studies of programs' costs and outcomes have been deservedly criticized for lack of completeness, Executive Order 12,866 requires agencies to provide a regulatory impact evaluation if a rule or regulation may "have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities." A similar directive to consider

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2 See id.


costs and outcomes explicitly appears in the Unfunded Mandates Reform Act of 1995.\textsuperscript{7} In what may have a dampening effect on cost and benefit comparisons in decision making, at least in the private sector, juries seem to punish private-sector firms that try to balance costs and benefits of harm to customer or worker health when making production decisions prior to accidents and ultimate tort suits.\textsuperscript{8} However, where government regulations are concerned, no longer is the debate mostly over whether to consider costs and benefits, but rather over what belongs in the cost and benefit columns.\textsuperscript{9}

Frank and Sunstein offer a simple solution to the thorny issue of how to incorporate non-uniform net benefits across initially advantaged versus disadvantaged groups when calculating net benefits of a regulation. In particular, they suggest that the valuation of safety depends on one's reference group and would be quite different depending on which other groups are also paying for safety-enhancing policies.\textsuperscript{10} We argue that there are conceptual and practical flaws to Frank and Sunstein's modest proposal and urge that those who produce and use studies of regulatory costs and outcomes should not adopt it. In particular, there is no unique way to identify a person's social reference group from a statistical model of individual behavior, and there are no well-established survey results concerning reference group membership. Moreover, much statistical evidence suggests that the postulated social reference group effects are small and of little consequence for a broad set of individual behaviors.\textsuperscript{11} Because carefully constructed cost-benefit studies consider a range of values that encompasses the adjustment suggested by Frank and Sunstein, decision makers should retain the current approach of using absolute benefit values rather than Frank and Sunstein's adjusted benefit values. Of greater value to policymakers than what Frank and Sunstein recommend would be regulatory agency reforms requiring more careful cost-benefit studies and adherence to best available practice guidelines. Use of speculative reference group adjustments could potentially undermine the perceived legitimacy of the valuation of reduced risks to life and health.


\textsuperscript{8} W. Kip Viscusi, Jurors, Judges, and the Mistreatment of Risk by the Courts, 29 J. LEGAL STUD. 107 (2001).

\textsuperscript{9} For a brief and readable discussion, see Thomas J. Kniesner, Evaluating Risk Reduction Programs, RISK IN PERSPECTIVE, Dec. 1997.

\textsuperscript{10} Frank & Sunstein, supra note 3, at 348-63.

\textsuperscript{11} See infra note 40.
I. Current Practice in Policy Evaluation

As currently practiced, analysis of risk reduction benefits typically relies on multivariate statistical estimates of the wage premium a worker is implicitly willing to accept to incur job risks or what a consumer is implicitly willing to pay for a safer product. Estimates of risk-money tradeoffs underlie the estimated benefits of saving a statistical life, known either as the implicit value of life or the value of a statistical life. Risk-money tradeoffs also underlie the estimated benefits of preventing certain non-fatal injuries, sometimes referred to as the implicit value of harm or the implicit value of injury. Government regulations mandating greater safety will lower wages and raise product prices so that the end users of the safety, workers and consumers, ultimately pay the costs of attendant safety enhancements. The change in wages or prices then reveals the value of a regulation-induced safety enhancement which one may compare to cost calculations in a cost-benefit analysis.

A standard procedure used to calculate benefit values for any government program is the amount people are willing to pay for the program's benefits. In the case of risk regulation, the reference point is our willingness to pay for the risk reduction achieved by the regulation. In the case of policies intended to save lives, the question is not how much people are willing to pay for the particular outcomes in terms of actual lives saved, but how much people are willing to pay for reductions in the risk to life for a much broader population group. The benefit being purchased at the time of the policy decision is life risk reduction, not the saving of lives identifiable ex post.

To establish meaningful values for the tradeoffs people are willing to make between risk and money, economists have examined choices people make in the marketplace. Studies focus on actual decisions in that they reflect how much people value safety in their own decisions. In contrast, if government officials picked the values on their own, we would be getting the benefit values of government bureaucrats, not the benefits of the population at large. Similarly, instead of relying on market evidence, we could undertake a survey of how much people value safety. Although survey evidence is often useful, obtaining honest and reliable responses

13 For examples of cost-benefit analysis in government programs, see LEE S. FRIEDMAN, THE MICROECONOMICS OF PUBLIC POLICY ANALYSIS 179-197 (2002).
often proves problematic. The continuing controversy over the use of contingent valuation methods to value environmental damages attests to the difficulty of obtaining accurate contingent value estimates.\textsuperscript{16} Obtaining market-based estimates of the value of life is complicated by the fact that people seldom trade risks to life solely for money. Rather, money and risks are bundled as part of a set of many characteristics of jobs or products. The task for economists is to use statistical methods to isolate the tradeoff between money and risk embodied in market decisions.

Estimates from the labor market serve as a chief source of information about risk-money tradeoffs.\textsuperscript{17} Using large data sets on worker behavior, one can estimate the incremental wages workers receive in return for facing added risk, controlling for other aspects of the worker’s job. According to most studies, the wage increment approach yields an implicit value of life in the range of $3 million to $7 million.\textsuperscript{18} For the sake of convenience, we will take the midpoint of about $5 million as an appropriate value of a statistical life based on market wage-risk tradeoffs. Therefore, if workers faced an annual job fatality risk of one chance in 10,000, an implicit value of life of $5 million suggests that each worker would require an extra $500 per year to face an added 1/10,000 risk of death. Put somewhat differently, if there were 10,000 workers affected, each of whom faced a job risk of one chance in 10,000, then there would be one expected statistical death to the group. In return for facing the 1/10,000 risk, there would be a wage supplement of $500 for each of the 10,000 workers, or a total of $5 million more paid in wages. Implicitly, the group of workers is willing to exchange total compensation of $5 million for the additional risk of one statistical death to their group. This gives rise to the $5 million estimate for the value of a statistical life. We will refer to estimates of extra group compensation as the implicit value of life figures. Market-based estimates of the value of life are not limited to the labor market. Similar estimates have been derived by analyzing housing price responses to hazardous waste risks, the higher prices commanded by safer cars, and the tradeoffs reflected in many other choices between a product’s price and its safety, quality, or reliability.

The sound basis for estimating the value of life is of tremendous importance in establishing the legitimacy of cost-benefit analyses. Surely, valuation of risks to life is potentially controversial. Indeed, some might consider this exercise immoral.\textsuperscript{19} However, the market values establish a

\textsuperscript{17} Jones-Lee, supra note 12, at 306-14.
\textsuperscript{18} For a review of the evidence, see VISCUSI, supra note 12, at 54-57, tbl.4.2.
sound basis for estimating the benefits of health and safety improvements because they track people’s own valuations reflected in real decisions. In addition, the substantial value of life figures, which are well in excess of the present value of people’s earnings, help diminish concern that risks to life are being undervalued.

With the goal of increasing realism and transparency of calculations and decisions, practitioners of cost-benefit analysis have assembled several panels of experts to make recommendations for what a well-formulated cost-benefit comparison should contain in the areas of the environment, health, and medicine. Cost-benefit analysis frequently raises a concern that distribution of costs and benefits according to such categories as income or race should not be totally ignored. If two policies have the same total costs and total benefits, one might argue on equity grounds that society should select the policy that does more for the poor. However, addressing issues of distribution more generally proves controversial and can lead to careless or strategic use of cost-benefit analysis. A stumbling block in applying adjustments for distributional considerations has been how to do it in practice while maintaining the well-known objective of KISS (Keep It Simple, Stupid). Frank and Sunstein present a clearly argued KISS-based proposal for incorporating income distribution consequences of health and safety regulations into decisions based on policy analyses. We contend that the conceptual and practical flaws we identify below should make practitioners of cost-benefit analysis justifiably unmoved by Frank and Sunstein’s refinements.

II. Frank and Sunstein’s Refinement to Current Practice

Frank and Sunstein propose that economists, lawyers, and policymakers shift from using typical, implicit, market-based value of life figures to using figures that consider individuals’ relative economic positions. Frank and Sunstein contend that people are on “a positional treadmill” where they accept extra pay for job risks in an effort to achieve relative economic (income/consumption) status. In their view, the federal government’s standard $4 million estimate of the value of life should increase for the following reason:

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21 COST-EFFECTIVENESS IN HEALTH AND MEDICINE, supra note 20, at 294-95.
24 Frank & Sunstein, supra note 3, at 326.
25 Id. at 327.
26 Id. at 323.
People care a great deal about their relative economic position, and not solely, and often not mostly, about their absolute economic position. Current estimates tell us what an individual, acting in isolation, would be willing to pay for, say, an increase in safety on the job. But when an individual buys additional safety in isolation, he experiences not only an absolute decline in the amounts of other goods and services he can buy, but also a decline in his relative living standards. In contrast, when a regulation requires all workers to purchase additional safety, each worker gives up the same amount of other goods, so no worker experiences a decline in relative living standards. If relative living standards matter, then an individual will value an across-the-board increase in safety more highly than an increase in safety that he alone purchases.\footnote{Id. at 326 (citation omitted).}

Frank and Sunstein maintain that a worker's concern over relative economic position means that, as currently calculated, market wage-risk tradeoffs understate the implicit value of life. If the government now uses $4 million as the average value of life, additional concerns over workers' relative positions should, in Frank and Sunstein's view, increase the appropriate amount to a range from $4.7 million to $7 million.\footnote{Id. at 323.} For the $5 million reference point that we introduced above, the value of life would range from $5.9 million to $8.8 million. Thus, Frank and Sunstein's procedure would boost the estimated average value of life currently used in benefit assessment by 18 percent to 75 percent.

The main, and surely controversial, innovation to cost-benefit analysis Frank and Sunstein advance is that persons care not only about the other things they can buy besides safety, but also about how their income or their consumption of other things compares to the income and consumption of other persons in society. Frank and Sunstein believe that my personal sense of well-being depends not only on my own income but also on where I am located in the income pecking order of whatever demographic barnyard I may belong to emotionally. In the Frank and Sunstein view of regulatory evaluation, greater mandated safety has attached to it the additional cost of moving down the income distribution ladder. Conventional estimates of willingness to pay for safety therefore incorporate the individual's cost of becoming worse off in a comparative residual income sense.

Frank and Sunstein conclude that conventional cost-benefit analysis undervalues health and safety regulation because the benefits are understated. Because a regulation makes everyone in the relevant group

\footnote{Id. at 326 (citation omitted).}
consume more safety and suffer similar wage reductions and price increases, there is no change in anyone's relative economic position from a widespread regulation. According to Frank and Sunstein, conventional benefit calculations that use risk-money tradeoff estimates are too low, because they net out the person's private loss from moving down the income distribution. Therefore, conventional cost-benefit calculations are too economically pessimistic about society's gain from the regulation. Frank and Sunstein ultimately argue that conventionally calculated value of life estimates should be increased when a proposed regulation would save statistical lives. The obvious possible practical consequence of this proposal is that some regulations currently failing cost-benefit analysis may now generate benefits in excess of costs.

III. Conceptual and Practical Weaknesses of Frank and Sunstein's Proposal

Often the devil is in the details. Here the devil is in what Frank and Sunstein leave out of the details. The standard economic approach to understanding a person's or a firm's decisions is symmetric because it compares the price to the economic value of the good or service. Frank and Sunstein want an asymmetry in the individual's decision such that, in addition to the usual economic benefit a service or a good provides at a cost equal to its price, there is a second price (cost) of safety purchased in isolation. The second (hidden) cost is reduced purchasing power for other things compared to the other members of a person's reference group. Residual income has a so-called positional effect in that the person implicitly buying the safety would also pay an additional amount not to have an associated decline in comparative command over other things, such as clothing or pleasure travel. The amount one would pay to avoid moving down the social consumption ladder would then be added into any social calculation of the benefits of a safety-enhancing regulation that is applied universally.

A. Asymmetric Treatment of Relative Position's Importance

Consumption can surely be a status symbol, and Frank and Sunstein are correct in suggesting that higher income confers greater economic status. However, other job attributes may prove consequential as well. Perhaps most pertinent here is that good health is a highly valued attribute. People may simply have a preference for safer jobs because safe jobs protect individual health.

We find Frank and Sunstein's willingness to focus on residual income (non-safety consumption) position somewhat odd. If I care about my
relative income, then I should also care about my relative health and safety.\textsuperscript{29} Frank and Sunstein argue that workers know their relative income position but do not know their relative safety position at work.\textsuperscript{30} At the risk of sounding like the cartoon sociologist to whom two anecdotes are a large data set and one anecdote is a small data set, a brief story is in order. One of us once worked during the summer in a chemical plant. Everyone in the plant knew that working in the acid production department was much more dangerous than working in the sodium production department. Likewise, most butchers we have met are missing a part of at least one finger, and most roofers we have met have a broken back of varying degrees of severity. Also, one need not have the same reference group for safety as for residual consumption.\textsuperscript{31} Workers do know their relative workplace safety, so it is difficult to accept safety in the workplace as a non-positional good.

We contend that, if income remaining after one implicitly purchases more safety or health affects well-being indirectly via the relative ability to purchase fewer other things, then a regulation also makes one better off because the additional safety or health is not only absolute but also relative to a reference group. Safety or health may also be commensurately positional because I get additional well-being from being safer than my neighbors or colleagues. If it seems reasonable for one to care about how one’s consumption of non-safety goods compares to the consumption of others, then it also seems reasonable that one could care commensurately about how his or her consumption of safety and health compares to others’ safety and health. The two positional effects may then simply cancel. The supplemental welfare effect of moving up the safety ladder can cancel the supplemental welfare effect of moving down the “consumption of all other goods” ladder, and we are back to the familiar case where only the absolute levels of safety and residual income need be considered.

One source of evidence regarding countervailing positional effects of health is the relationship between income and the desire for health insurance. As people get richer, do they have a greater desire to purchase health insurance to protect their health? The evidence here is quite strong. Economic estimates suggest that as one’s income increases by some percentage, the demand for health insurance also increases, but at roughly half that rate.\textsuperscript{32} The observed relationship between income and the desire

\textsuperscript{29} For additional theoretical discussion of offsetting positional effects, see Gregory Besharov, Three Questions About the Economics of Relative Position: A Response to Frank and Sunstein (AEI-Brookings Joint Center for Regulatory Studies, Working Paper No. 01-08, 2001).

\textsuperscript{30} Frank & Sunstein, supra note 3, at 351.

\textsuperscript{31} For additional theoretical discussion of multiple reference groups see Besharov, supra note 29, at 8-10.

\textsuperscript{32} See, e.g., Joseph P. Newhouse & Charles E. Phelps, New Estimates of Price and Income.
to protect one’s health suggests to us that workers are concerned not only with their income position but also with their health position in society.

An even more direct piece of evidence on countervailing health positional considerations pertains to how persons’ attitudes toward bearing risks on the job vary with their income levels. Consider the following evidence on chemical workers’ attitudes toward facing greater risks of job injury. For chemical workers in this study, the main matter of interest is not the implicit value of life, but rather the implicit value of a job injury as reflected in the tradeoff workers are willing to make between higher pay and greater risks of injury from the job. Evidence for chemical workers indicates that the implicit value of a job injury increases quite strongly with income, with estimated income elasticities of 0.67 to 1.1. Thus, a 10 percent increase in income would boost the value attached to avoiding a job injury by 6.7 to 11 percent. A higher income enables one to avoid the risky jobs, which quite simply are not that attractive. This means that people seem to show a willingness to trade off income position for an improved health position.

The undesirability of hazardous work is also reflected in who takes such jobs. Are the most dangerous jobs in the firm the most sought after by workers who want to boost their economic status relative to their peers? Such a story line would offer much support for Frank and Sunstein’s perspective that workers try to boost their economic status through hazardous work. In practice, we observe the opposite. Risky jobs tend to be staffed in large part by new hires who tend to have very little job experience. Indeed, as many as one-third of all manufacturing quits may be due to the influence of job hazards. Workers do not seek out risky positions; in fact, new workers fill hazardous jobs that tend to be primarily entry level. Workers quit these jobs quickly to avoid facing the attendant health risks. The rapid flight of workers from risky, entry-level jobs is consistent with our empirical observation that hazardous jobs tend to be among the least attractive positions in any enterprise. They also tend to be smelly, dirty, and undesirable jobs in other respects as well. Risky jobs are not the treasured targets of opportunity for upward mobility that Frank and Sunstein envision.

To be fair, Frank and Sunstein acknowledge the possibility that safety and health are positional goods too, although they claim the positionality

Elasticities of Medical Care Services, in THE ROLE OF HEALTH INSURANCE IN THE HEALTH SERVICES SECTOR 261 (Richard N. Rosett ed., 1976).


35 See id. at 188-219. See also W. KIP VISCUSI, RISK BY CHOICE: REGULATING HEALTH AND SAFETY IN THE WORKPLACE 67 (1983).
of health and safety is less than the positionality of residual income.\(^{36}\) Frank and Sunstein also consider implications of a situation where safety or health is partly positional, but not as positional as residual consumption.\(^{37}\) Specifically, Frank and Sunstein mention the situation where the positional effect of residual consumption is half offset by the positional impact of safety.\(^{38}\) Does it matter whether safety and health are partially rather than totally non-positional to the practice and use of cost-benefit analysis? Does the core of their argument affect what is “good enough for government work?” Soon we will demonstrate that “where the rubber hits the road,” so to speak, in the practice of cost-benefit analysis, the refinements Frank and Sunstein propose change nothing.

Finally, although Frank and Sunstein mention the phenomenon of loss aversion, they do not explore fully how it weakens the argument for a possible role of relative position effects in benefit assessment.\(^{39}\) To elaborate, loss aversion can alter how we view the role of job risks. If people are, in reality, quite averse to incurring substantial losses in income, this behavior will have tremendous consequences for the attractiveness of hazardous jobs. If one is maimed or killed on the job, either the worker or the worker’s survivors will experience a substantial drop in income. Because hazardous jobs are intrinsically linked to the prospect of substantial losses, it is unclear that a worker will gain relative social status through work on dangerous, high-wage jobs. The key consideration is that a job is a bundled commodity that includes both current and future income consequences, adverse health effects, and potentially unattractive non-pecuniary losses. Given an undesirable mix of attributes along with the higher wage premium for the job, will working on a dangerous job in fact confer the kind of social climbing effects that Frank and Sunstein envision?

B. Flawed Evidence of Relative Position’s Importance

Getting a handle on how people value their relative position with respect to others is a difficult empirical task. There is little multivariate statistical evidence that people’s economic behavior depends importantly on peer or reference group behavior.\(^{40}\) Frank and Sunstein present a variety

\(^{36}\) Frank & Sunstein, supra note 3, at 351.
\(^{37}\) For more discussion of the size of positional (externality) effects, see BESHAROV, supra note 29.
\(^{38}\) Frank & Sunstein, supra note 3, at 348-51.
\(^{39}\) See id. at 340 (discussing loss aversion with respect to how people must pay for regulation).
\(^{40}\) Among the extensive empirical studies of peer group effects is the important recent study by Ginther, Haveman, and Wolfe, who find that any estimated effects of neighborhood characteristics on young persons’ schooling completion and non-marital childbearing disappear when the multivariate model includes extensive information on the individual’s and the family’s characteristics. Donna
of suggestive evidence that relative economic position may matter, but the
caracter of their evidence tends to be less compelling than that of market
values of wage-risk tradeoffs. It is also less concrete than our contradictory
evidence presented above, which is based on actual market behavior rather
than on thought experiments and on general surveys of people's happiness.

Frank and Sunstein rely on various types of thought experiments.\(^4\)
For example, would you rather live in World A, where you earned
$110,000 per year while others earned $200,000, or would you rather live
in World B, where you earned $100,000 per year while others earned
$85,000? The subjects in this positional income thought experiment are
also told that the income figures represent real purchasing power. About
half of Frank and Sunstein's experimental subjects, which include
University of Chicago Law School students, say that they would prefer the
World B situation with higher relative income. Frank and Sunstein
interpret the slight majority favoring World B as evidence of the
importance of relative position. An even more plausible interpretation of
the subjects' conjectures is that survey respondents will not take at face
value experimental situations premised on an economic falsehood. People
will realize that in World A, where they earn just under half of what
everybody earns, the prices of goods and services will be bid up and they
will be less well off than if their earnings are greater than everyone else's.
The "equal purchasing power" disclaimer will not be fully credible to
experimental student subjects who realize the importance of their income
within the context of the incomes of other people in giving them access to
goods and services in our economy.

A second kind of evidence Frank and Sunstein muster pertains to
happiness surveys. Researchers have found that, when you ask people
whether they are "very happy," "fairly happy," or "not happy," their
answers are strongly correlated with their relative income within the
country.\(^2\) How should one answer a categorical happiness question when
it is posed? One cannot resort to a thermometer or a weight scale to obtain
an objective reading. Categorical happiness questions are, therefore, by
their nature answered within their social context. Frank and Sunstein also
note that the distribution of responses to categorical happiness questions
often seems to be unaffected by changes in overall levels of income over

\(^4\) Frank & Sunstein, supra note 3, at 336-37.
\(^2\) See id. at 337-39.
The phenomenon of no income-level effect is also consistent with the relative character of the question. If one asked a person in the late 1800s to assess personal happiness the person might have indicated that he or she would be very happy if there were a functioning well and an outhouse in close proximity. However, access to these two amenities would probably not make one feel “very happy” today.

In much the same way, the current standard of living will likely influence studies regarding what budget is needed to obtain some minimum comfort level or “to get along in this community.” People’s life expectancies were lower 50 or 100 years ago, and many of the products we now purchase on a mass scale, such as telephones or television sets, were formerly restricted to a narrow band of relatively wealthy consumers. What we need “to get along in this community” necessarily changes with the community’s standard of living. Relative questions will necessarily generate relative answers, but they do not bolster Frank and Sunstein’s core proposition. Answers to questions about relative income or consumption simply do not constitute a valid test of the importance of relative positional effects in calculating willingness to pay.

The linchpin of Frank and Sunstein’s insights on policy evaluation of workplace safety regulation is that workers seek a positional status benefit by accepting dangerous jobs, which confer higher income. How much higher income? Suppose we again use as a starting point for discussion a value of life estimate of $5 million, which exceeds the $4 million figure Frank and Sunstein use as their baseline. The average worker in the U.S. economy faces an annual death risk on the order of one chance in 20,000. With a value of life of $5 million and a death risk of one chance in 20,000, the average worker exposed to such a risk will receive supplemental annual compensation of $5 million × 1/20,000 = $250 a year, which is roughly $5 extra gross earnings per week. Working on a dangerous job may enable you to buy an extra value meal every week at McDonalds but will not buy a Rolex watch, a BMW, or any high-impact status symbol that one can flaunt to demonstrate one’s higher economic status. The point is that one does not buy much extra relative consumption for accepting a job that is two or three times more dangerous than the average job.

Frank and Sunstein’s proposition that positional effects are important to evaluating willingness to pay and attendant regulatory benefits is flawed with respect to their attribution of the relevant reference group. As the quote above indicates, Frank and Sunstein believe that, if all workers are required to purchase additional safety, no positional effect will take place. Only when an individual worker must have greater job safety is relative

43 Id. at 337-39, 353.
44 Id. at 353.
45 See NAT’L SAFETY COUNCIL, INJURY FACTS 46 (2000).
position consequential, so that regulatory policies will supposedly not be subject to the positional evaluation bias that affects market tradeoffs. However, safety policies in the United States are not financed by general revenues so that costs are spread across the entire society. If there is a government regulation of, for example, the risks of explosion in a grain elevator, then the regulation will boost the costs to the firm and will be borne, at least in part, by other workers at the firm because the regulation can raise the price of the product and reduce sales and the firm’s subsequent demand for workers. The neighbors of the grain elevator workers who perhaps work for a construction firm or the highway department will not be affected by the costs of the grain elevator safety regulation. Only the grain elevator’s workers will incur a major share of the regulatory costs. In the case of the typical regulation just described, there will still be the economic status effects that concern Frank and Sunstein. Only when everybody in society shares in a regulation’s cost will there be no positional reshuffling. How a regulation’s cost must be shared to avoid a positional effect remains unclear. We do not know whether equalizing absolute cost amounts across people, maintaining a proportional effect on their income, or following some other formula would ensure positional neutrality.

We end our discussion of the fundamental empirical issues surrounding supplementing cost-benefit analysis with relative positional effects by noting that what Frank and Sunstein idealize is not practicable. Because possible reference groups are nested inside each other, multivariate statistical models of individual outcomes cannot uniquely identify the individual’s reference group. To elaborate, suppose we consider the effects of others’ incomes on my behavior, and my true reference group is only my neighbor living in the house to the east. The researcher cannot know that only the income of one neighbor enters my decisions. Therefore, a statistical model incorrectly identifying all the houses on my block as my reference group will find that the average income on my block is statistically significant to my behavior because incomes are positively correlated across houses nearby.


47 Readers interested in learning more about the impracticability of pinning down a person’s social reference group empirically should consult the highly readable primer, Moffitt, supra note 40, and the extensive bibliography of peer group effects we have placed on file at Yale Journal on Regulation.
C. **Narrow Practical Implications**

Let us come at the issue of positionality in cost-benefit analysis from the perspective of persons outside the Ivory Tower who use and defend cost-effectiveness calculations. Frank and Sunstein contend that income position, not just income level, matter when individual well-being is linked to safety. They accordingly suggest a 50 percent increase in the current value of life estimates. In response, a second anecdote is in order. One of us spent a year in the private sector, conducting cost-effectiveness studies in a major drug company, where there is much financial incentive to discover defensible arguments for increasing the benefits of a health enhancing pharmacotherapy. Even in an environment as profit-oriented as a drug company, it would have been impossible to use made-up examples of Smith and Jones\(^4\) and introspection\(^5\) to convince senior managers that the company could justify increasing the advertised benefit of the pharmacotherapy by half. No one on the cost-benefit analysis firing line is going to cite thought experiments or a comparison of pay and performance in three selected occupations\(^5\) as justification for changing the current approach to benefit calculations. Multivariate statistical evidence of the extent of any positional income effects will be needed, and we have just noted that reference group effects cannot be accurately estimated.

The only available study of even tangential relevance to welfare effects of relative income position is the Dutch study by Van de Stadt, Kapteyn, and Van de Geer\(^5\) which Frank and Sunstein discuss.\(^5\) Without commenting on the quality of the statistical model or the generalizability of the Dutch study's results, let us simply note that Frank and Sunstein interpret these results to indicate an implied 33 percent increase in willingness to pay because a person would feel indifferent between the current situation and one in which he or she got a 33 percent increase in income while everyone else of importance to the individual got a 100 percent increase in income. The implication is that someone who would pay $1 for additional safety when consuming it alone via a $1 higher product price or $1 lower wage would also pay $1.33 if everyone else was regulated to consume the extra safety, so that there is no relative decline in one's residual consumption. If safety is partly, but not totally, positional, too, then the add factor is perhaps half of the 33 percent, or 17 percent.

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\(^4\) Frank & Sunstein, *supra* note 3, at 348-51.
\(^5\) Id. at 352-53.
\(^5\) Id. at 361-63.
\(^5\) Frank & Sunstein, *supra* note 3, at 353.
Therefore, in our judgment, the best estimate Frank and Sunstein could offer is increasing values typically attached to the benefits of risk reduction by 17 to 33 percent. However, a regulation's cost effectiveness will not change whether one increases the usual estimate of regulatory benefits by 17, 33, or even 50 percent. Bumping up the benefits by the amounts suggested by Frank and Sunstein will not change how benefit estimates enter current regulatory evaluations. Users of statistical results concerning human behavior typically consider not only the estimated average outcome but also a range of possible outcomes based on theoretical considerations or on the expected precision of the estimated average outcome. The increase Frank and Sunstein advocate will fall within that range.53

Another useful measure of the extent to which the Frank and Sunstein approach might make a difference in policy evaluation comes from finding the number of additional regulations whose benefits would exceed costs if one applied the 33 percent increase to benefits. For the sake of concreteness, let us rely on the estimates of cost per life saved compiled by the OMB and reported in a book by Justice Stephen Breyer.54 We have converted Justice Breyer's data, which summarizes the cost per life saved for 53 different government policies, into graphical form as Figure 1. Now take the reference point value of $4 million per statistical life saved, which Frank and Sunstein treat as the current applied government standard for evaluating regulations. Policies with a cost per life saved less than $4 million would pass the benefit-cost test, and policies with a cost per life saved greater than $4 million would fail the benefit-cost test. Suppose we raise the value of life to $4.7 million (= $4 million × 1.17), the most conservative add factor Frank and Sunstein discuss. Upping the benefit per

53 David H. Krantz, The Null Hypothesis Testing Controversy in Psychology, 94 J. AM. STAT. ASS’N 1372 (1999). Incorporating the statistical accuracy of an estimate means that policy evaluations usually consider a range of outcomes rather than just the best single estimate of the outcome. Our own preference is for the use of mean values of parameters when undertaking assessments of benefits and costs. However, government agencies often rely on worst case assumptions in assessing risk, or upper bound values. It is noteworthy that the Frank and Sunstein estimates fall within the bounds of error for estimated value of life. Consider the well-known estimate of the value of a statistical life from Richard Thaler & Sherwin Rosen, The Value of Saving a Life: Evidence from the Labor Market, in HOUSEHOLD PRODUCTION AND CONSUMPTION 265 (Nestor E. Terleckyj ed., 1975). Using Thaler and Rosen's core results, id., we find a range for workers' implied willingness to pay for workplace safety that is the average minus 80-240 percent and the average plus 80-240 percent. Notice that the smallest optimistic outcome for willingness to pay that a careful policy analyst would routinely consider in our example is the average plus 80 percent, which is a 2.4 times greater adjustment than Frank and Sunstein's (33 percent) back-of-the-envelope calculation of how current practice supposedly underestimates the value of life by ignoring distributional issues. Even if the estimated average value of life is, say, five times as large as its standard error, a comprehensive policy evaluation would consider the average plus 60 percent, which is almost double the add factor Frank and Sunstein offer.

statistical life saved by $0.7 million permits three additional regulations to pass a benefit-cost test: rear lap/shoulder belts for autos, standards for radionuclides in uranium mines, and benzene NESHAP regulation (original: fugitive emissions).

Figure 1. Cost Per Premature Death Averted


What if instead we use the most liberally adjusted (for positional effects) estimate of the value of life that Frank and Sunstein consider, $7
Relative Economic Position

million (= $4 million x 1.75)? No regulations, besides the afore-mentioned three, would pass cost-benefit analysis when the value of life increases from $4.7 million to $7 million. In all, only 3 of the 53 regulations listed by Justice Breyer would become cost-effective if we moved from current value of life amounts to the upper bound that Frank and Sunstein estimate. Almost doubling the value of life in economic regulatory evaluation would thus have little effect on the economic desirability of a wide range of regulatory policies.

IV. The Need for Regulatory Reform

The most basic improvement we could make to today's policy decisions is not the comparatively minor refinement in the estimated value of life proposed by Frank and Sunstein. More valuable would be greater agency care in producing cost benefit studies that adhere to currently accepted practices, as well as greater agency adherence to the implications of the estimated benefits and costs when setting regulatory policy. The policy remedy proposed by Frank and Sunstein involves increasing the value of life used by federal agencies in assessing health and safety risk regulations. In our view, the more pressing concern is to get agencies to use conventional value of life estimates in their calculations of economic benefits of regulations and, more importantly, to select regulations to achieve a balance between the benefits and costs of regulatory activities.

In an effort to overcome the legislative constraints that restrict the ability of agencies to base policies on benefit-cost tradeoffs, Congress has considered a variety of legislative proposals aimed at regulatory reform. A particularly active year for such proposals was 1995, but Congress never enacted any of the proposed bills.

A key provision in regulatory reform bills is a super-mandate in which the legislation would override restrictions preventing the implementation of a cost-benefit test. In its restrictive form, reform bills could require that no agencies issue regulations without demonstrating that the benefits of the regulation exceed the costs. A less stringent possibility (that has not yet been embodied in legislative proposals) would be to

55 See Cost-Effectiveness in Health and Medicine, supra note 20, at 304-11; Hahn et al., supra note 6.
permit agencies to consider benefits and costs within the process of promulgating regulatory policies. This change would eliminate the current legislative constraints on regulatory agencies and would permit the OMB to promote the balancing of benefits and costs as part of the regulatory oversight process. Although requiring agencies to demonstrate that benefits exceed the costs of the regulation is more aligned with economic efficiency principles, imposing an efficiency test as a legal requirement could complicate the process of issuing a new major federal regulation.

Some regulatory reform bills have proposed a more elaborate regulatory review process. Requiring the agency to demonstrate that benefits exceed costs could potentially generate considerable legal uncertainties over regulations for which the benefits are not readily quantifiable because they involve goods that are not traded in markets. Many environmental amenities have non-traded property, and economists have been developing survey techniques in an effort to attach monetary values to societies' willingness to pay for policy benefits of non-traded goods. One of the more prominent regulatory reform proposals included provisions for peer review and judicial review of regulation.58 Additional layers of review could, however, potentially stymie the development of new regulations.

A second component of possible regulatory reform is incorporating risk-risk analysis tests, so that on balance, the regulation will have a safety-enhancing effect.59 One form of risk-risk tradeoff pertains to substitution risks.60 Suppose, for example, that the government had chosen to ban saccharin as an artificial sweetener. If, instead, people drank products containing sugar, the risks of obesity and the attendant hazards posed by obesity would increase. Thus, to determine the net health benefits of banning saccharin, one must consider effects on health risks once other changes in behavior are taken into account. Another form of risk-risk tradeoff arises because all economic activity poses some form of health and safety risk. If, for example, the government imposed a regulation that entailed the manufacture of new forms of pollution control equipment, then it is possible that some workers might be injured or killed in the production of the additional pollution control equipment, and the net health-enhancing effects of the regulation would diminish to some extent.


59 For a discussion of risk-risk analysis, see Viscusi, supra note 12, at 69-83.

60 The Risk Assessment and Cost-Benefit Act of 1995 contains a particularly extensive treatment of substitution risk, requiring that agencies recognize it and incorporate studies of substitution risks in their assessments of regulatory policies. See Risk Assessment and Cost-Benefit Act of 1995 § 105(4).
The most controversial form of risk-risk analysis, however, pertains to the health consequences of excessive regulatory expenditures. Regulatory allocations involve an opportunity cost in that they impose real financial costs on consumers and taxpayers because the money spent on regulatory costs would otherwise be spent on other bundles of consumer commodities. Based on the risk-risk approach, economists have estimated that, on balance, regulation harms individual health when government agencies propose risk-reducing regulations that impose a cost per life saved at levels of $50 million or more.\textsuperscript{61} The rationale is that consumers could have spent this money on an ordinary bundle of consumer goods and services, including health care, the net benefits of which would be health-enhancing (as is reflected in the fact that individual longevity increases with income not only in the United States but also throughout the world). Examining the net risk effects of regulation remains important, but the role of risk-risk analysis in preventing regulations that are so expensive per life saved that, on balance, they harm individual health should diminish once cost-benefit tests are imposed more generally.

A third major agenda item with respect to regulatory reform would be the adoption of unbiased risk assessments within the context of regulatory analyses. At present, regulatory agencies frequently use various upper-bound values in assessing risk.\textsuperscript{62} Thus, rather than using the mean or median risk values, agencies construct risk estimates using parameters that are often upper bounds of the distribution, such as the 95th percentile. By using, for example, the 95th percentile for every parameter in a risk analysis, calculations place the risk value well beyond the 95th percentile of the distribution of the true risk. In the case of hazardous waste sites, the calculated risk following EPA assumptions is well beyond the 99th percentile of the distribution of the true risk. Regulatory reform bills that provide for unbiased risk assessment would force agencies to base regulations on risks that are likely to occur rather than on worst case scenarios. The present policy tilts regulatory agencies away from true risks that actually exist and towards dimly understood risks for which the best estimates are likely to be much lower than the figures calculated by the regulatory agency.

Other provisions of regulatory reform bills are less essential, but may be worthwhile. Some bills have required that agencies engage in additional research and training of regulatory officials.\textsuperscript{63} Other provisions require the

\textsuperscript{61} Viscusi, supra note 12, at 76, 82 (finding a cost-per-life threshold for beneficial health effects below $50 million).


agency to undertake a detailed set of comparisons of the risk it regulates with other risks that it might choose to regulate.\textsuperscript{64} Placing the agencies' priorities among alternative regulations that it might pursue has also been suggested as a way of rationalizing policies.\textsuperscript{65} Prioritizing comparisons may be less important to sound regulatory decisions once OMB has the leeway to impose cost-benefit tests.

Our agenda for proposed regulatory reform is in many respects much simpler and streamlined than many of the proposed regulatory reform bills. First, in their examinations of regulatory programs, agencies should base their assessment of risks on mean values using the best available scientific evidence, which will save the greatest expected number of lives. Saving lives should, of course, be the paramount social concern. Second, agencies should calculate the cost of regulations and assess the value of the benefits using the values of statistical life that have been developed in the literature. In our view, there is no reason to adjust these values because of the factors pertaining to the positional externalities, as the Frank and Sunstein analysis suggests. Third, agencies should be permitted to consider fully the benefits and costs of regulations when setting policy. Full consideration of benefits and costs is a minimal requirement. There should exist either a cost-benefit requirement within the regulatory reform legislation or a meaningful regulatory oversight effort, ensuring only regulations generating more benefits than costs to society.

Much of what appears in the detailed regulatory reform proposals is not essential and is not on our proposed menu of reform. Detailed judicial reviews, lengthy peer review processes, retrospective agency assessments of regulations that already exist, and other peripheral proposals might be considered in the longer term. However, from the standpoint of the immediate policy needs, the major task is to put health and safety risk regulations on sound footing in terms of the fundamental character of the regulatory approach. The Frank and Sunstein proposal does not strengthen the role for established scientific methods, but indeed further undermines the integrity of using value-of-life approaches.\textsuperscript{66}

Conclusion

The issue of evaluating distributional equity in costs and effects of government intervention is like the old saying about the weather, "Everyone complains about it but nobody does anything about it." Just as scientists do not have the technology to change the weather, empirical

\textsuperscript{64} See \textit{e.g.}, \textit{id.} at § 105(3).
\textsuperscript{65} \textit{id.} at § 109.
\textsuperscript{66} But see \textsc{Cass R. Sunstein}, \textsc{Risk and Reason} (2002) (doing much in a constructive vein to bolster the role of cost-benefit analysis).
researchers have not generally had the statistical tools to study the average overall effect of state intervention in behavior while examining accompanying distributional consequences in a transparent and statistically well-justified way. The good news is that things are changing, and elegant statistical techniques have started to appear, producing empirically robust conclusions about cost and benefit distribution consequences.\textsuperscript{67} The bad news is that, because of their complexity, even the most transparent of the statistical techniques for understanding distribution issues are still a long way from being put into widespread use.\textsuperscript{68}

As alluring as Frank and Sunstein’s simple attempt to introduce the distribution of outcomes into the typical cost-benefit calculation is, there are good reasons not to do it their way. When there is real money on the table, decision makers want evidence based on observed behavior in a real-life setting that has been examined with a multivariate statistical model. However, one cannot feasibly identify the individual’s reference group uniquely from a statistical model applied to observational product and labor market data. Another objection to enlarging the benefit side of the typical cost-benefit analysis is that there may be countervailing positional effects stemming from the distribution of the benefit. One’s drive for status will include a concern with health and risk of death or disability, not just with income. Finally, boosting value of life measures as Frank and Sunstein recommend will have little consequential effect on policy evaluations.

Despite the obvious sensitivity of assigning a value to life risks, using the value of life to calculate policy benefits has become standard practice throughout the government.\textsuperscript{69} What accounts for this widespread adoption of the method? In our view, the fact that the estimates are based on real market data for life and death choices rather than hypothetical thought experiments is a major contributing factor. Moreover, given the sensitivity


\textsuperscript{68} In particular, we know of only one econometrics text that pays any attention to estimating the robust distributional consequences of the outcomes explained in a regression model. See JACK JOHNSTON & JOHN DINARDO, ECONOMETRIC METHODS 370-79 (4th ed. 1997).

of the concerns, it is noteworthy that implicit value of life estimates derive from the value workers themselves place on risks of death as reflected in their labor market decisions. The Frank and Sunstein adjustments are based on hypothetical experiments and "happiness" surveys in the Netherlands and elsewhere, in which the link to how people value risks to their life becomes much less transparent.

Frank and Sunstein's exercise of superimposing speculative adjustments on the value of life is not innocuous. Valuing risks to life remains one of the most controversial components of policy evaluation. Given this inherent sensitivity, the ability to trace benefit numbers back to the revealed preferences of the citizenry gives them a degree of legitimacy. This legitimacy may be compromised by adjustments based on hypothetical classroom experiments and "happiness" surveys of dubious reference. What is at stake is not simply the cost-benefit cutoff for policies, which may not change greatly. (Future proposals for other speculative adjustments to valuing benefits could, of course, have more consequential effect.) The greatest immediate danger is to the underlying integrity of the benefit assessment process and the credibility of these estimates.

Our advocacy of implicit values of life, as typically constructed, does not imply that no issues remain to be explored. Among the most glaring questions are how we should value the lives of the elderly, who may have few years of remaining life expectancy, and children, who have an entire lifetime ahead. Risks to future generations are also difficult to value. Progress along the age and generational lines of program beneficiaries and payers will hinge on ascertaining the accurate risk-money tradeoff for each group of interest. Frank and Sunstein seek to complicate policy evaluation with a concern for how a small decrease in one's income implicit in purchasing a risk reduction will affect one's position on the economic status treadmill. However, we find no compelling evidence that the quest for economic status should lead to any adjustment in the value of life currently used in policy evaluations.

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