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Advice on Guidance: Peer Review of Draft Circular A-4 “Regulatory Analysis”

Glenn C. Blomquist

Department of Economics, University of Kentucky, Lexington, KY, USA
Email: GCBLOM@UKY.EDU

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Abstract

Benefit–cost analysis is a protocol for assessing alternative public policies, primarily in terms of efficiency. An important complementary element can be estimating distributional impacts to show net benefits for groups of interest. The fundamental advantage is enabling decision-makers to see and weigh the importance of changes in efficiency and changes in distribution. Rigorous estimates of any distributional effects should incorporate credible baselines, private behavior, and markets. Estimation for groups with limited evidence and data is hard. Primary estimates of net benefits should be based on conventional market values. Any estimates based on distributional weights should be supplementary estimates. Combining them into a single number, risks masking the impacts of efficiency and distribution. The values of regulatory effects to U.S. citizens and residents depend on where the risks of damage take place. Willingness to pay values by U.S. citizens and residents to adopt a global value of benefits to increase the probability of international agreements can be positive but will reflect uncertain negotiation and compliance. The primary analysis should focus on benefits and costs to U.S. citizens and residents within domestic borders. The recommended rate of 1.7% does not reflect the rates relevant for all members of society. Given the emphasis on distribution effects, rates should include those facing rates of 3% or more. Sensitivity analysis should include several rates. The onus should be on making the case for a specific behavioral bias and nudge that will successfully address the perceived problem. Recent meta-analyses of nudge interventions indicate difficulty in implementing effective nudges.

1. Prologue

When asked to serve as a peer reviewer for a proposed update of Circular A-4, I reflected on the role that the guidance and previous guidance had played in my research and teaching. I was both influenced by it and, in my own way, indirectly and modestly contributing to it. Valuation and benefit estimation have fascinated me throughout my career. Benefit–cost analysis (BCA) and regulatory analysis have been part of my teaching of BCA and environmental economics, regulation, and policy for roughly 30 years. With that background, I found

proposed changes in the guidance that made sense but also proposed changes that were troublesome. I tried to offer constructive comments but also be clear regarding fundamental concerns.

As I was writing my review, I became aware that I was not alone in questioning the economics and desirability of some of the proposed revisions. They were tantamount to a major overhaul of regulatory analysis and would change the nature of BCA. The result was a letter from previous Presidents of the Society for BCA (SBCA) to the Office of Information and Regulatory Affairs (OIRA) Administrator questioning the wisdom of several proposed, major changes and urging greater reliance instead on the existing, durable A-4. This action was taken by individuals who were acting on their own and not on behalf of the SBCA. Because I was an SBCA officer as recent Past President, I decided to not sign the letter. The President also refrained. We wanted to preclude the misperception that the letter reflected an official position of the SBCA. I have no regrets about that decision. Had I not been a current officer, however, I would have signed the letter as both a former SBCA President and former Editor of the *Journal of Benefit-Cost Analysis*. My intent would have been to promote updates that improve guidance to agencies and avoid fundamental changes that make it less clear and useful to policy decision-makers, especially concerning estimates of benefits, costs, and who gets them, all things considered.

2. Peer review of the proposed update of Office of Management and Budget Circular A-4: Regulatory analysis

This review was submitted to ICF International on July 14, 2023. A title, abstract, prologue, and epilogue have been added to what appeared as my part of “Individual Peer Reviewer Comments on Proposed Office of Management and Budget (OMB) Circular No. A-4, “Regulatory Analysis” at https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/08/A4-Peer-Reviewer-Comments_508c-Final.pdf on August 3, 2023. The views expressed in this review are mine and do not necessarily reflect views of the University of Kentucky, the SBCA, or any other organization. I have not received financial support for this review other than through the ICF acting on behalf of OIRA and the OMB.

3. BCA in regulatory impact analysis

Credit to the many scholars and practitioners who have contributed to regulatory analysis during the more than 20 years that preceded 2003 Circular A-4 and the 20 years of guidance under it. They have made the endurance of the fundamentals of BCA at the heart of that guidance remarkable.

Like the existing guidance, the proposed 2023 revision to Circular A-4 is intended to aid agencies in their analysis of the benefits and costs of regulations. Like the existing guidance, the proposed revision is intended to inform policymakers, other government stakeholders, and the public about the effects of alternative actions. Elaboration in the proposed revision leads to a document that is nearly twice the length of the original. Credit to the contributors for updating and for offering recommendations that reinforce existing guidance and others that would change guidance. I share the goal of shaping a revision that will endure 20 years, as did its predecessor and offer my thoughts on how to do it.

The expanded proposed guidance includes some recommendations and examples that will aid agencies in performing quality BCA and that are favorite points of emphasis when I teach BCA.

- Benefit–cost ratios are not meaningful indicators of net benefits and should not be used for that purpose. (page 4)
- Be cautious using cost-effectiveness ratios and try to use willingness to pay estimates in valuing health risks. When those preferred estimates are unavailable, there is a registry of CEA estimates in the Center for the Evaluation of Value and Risk in Health at Tufts University. (pages 6–7)
- It is difficult to show positive net benefits for price controls, quotas, mandatory uniform quality standards and controls on entry to employment or production. (page 27)
- Results should include presenting total and incremental net benefits for alternatives with different degrees of stringency. (page 27)
- Results should be presented with estimates of benefits and costs in constant dollars indexed to the same year expressed in discounted dollars. (pages 27–28 and 74)
- The sections on revealed preference, stated preference, and benefit transfer methods are excellent in that they reflect progress made in estimating methodology and technique. (pages 31–38).
- Estimates of benefits and costs should include gains or losses of time and discomfort or inconvenience. There was a time when the National Highway Safety Administration refused to include the time costs of the 55 mph speed limit on rural highways or acknowledge the discomfort and inconvenience costs of safety belts and shoulder harnesses that did not adjust automatically. (page 52)

This valuable guidance reflects best practice. I applaud their inclusion in this much-anticipated proposed revision to Circular A-4.

4. BCA – Fundamentals

BCA is a protocol for assessing alternative public policies in terms of efficiency primarily. The BCA is guided by economic and econometric theory. Efficiency is assessed in terms of net benefits. Policies are identified that would maximize net benefits, that is, the greatest good for the greatest number. Evaluation is in terms of the goodness of consequences and outcomes. Tradeoffs between equity and other non-efficiency values are identified and estimated when feasible and important. Social norms set boundaries for acceptable alternatives.

A widely used definition consistent with the one above is that BCA “is a policy assessment method that quantifies in monetary terms the value of all consequences of a policy to all members of society ... The broad purpose ... is to help social decision-making and to increase social value or, more technically, to improve allocative efficiency” (Boardman *et al.*, 2018).

An essential element of BCA is valuing impacts by monetizing them as benefits and costs. Benefits are policy impacts that are valued in terms of individuals’ willingness to pay, often reflected in their estimated demand. Costs are the opportunity cost of producing the impact. They are often measured by the value of the resources in the next best alternative, as reflected in the supply of resources. They are a vital part of estimating the net benefits of the policy impact on efficiency (Harberger, 1971).

A complementary element of BCA is estimating distributional impacts to show net benefits (changes in benefits less changes in costs) for groups or subgroups. The 2003 Circular A-4 guidance is as follows: “Your regulatory analysis should provide a separate description of distributional effects (i.e., how both benefits and costs are distributed among sub-populations of particular concern) so that *decision makers can properly consider them along with the effects on economic efficiency*. Executive Order 12866 authorizes this approach (my italics). Where distributive effects are thought to be important, the effects of various regulatory alternatives should be described quantitatively to the extent possible, including the magnitude, likelihood, and severity of impacts on particular groups.” (page 14) The biggest advantage of this practice is keeping the focus of BCA on efficiency and yet enabling decision-makers to weigh the importance of the estimates of changes in efficiency and changes in distribution together.

If distributional effects are anticipated to be important for a regulation or policy, estimating net benefits to groups or subgroups is warranted regardless of any weights that one might want to use to combine the efficiency and distributional impacts. However, estimating the distribution of net benefits can be challenging.

5. Distributional effects estimation is hard

The proposed 2023 revision of Circular A-4 encourages use of distributional weights on estimated benefits and costs, recommends a specific weighting scheme, and shows how to use it. Reaching consensus on the use and specific weighting scheme will be a challenge, but based on my experience, estimation of distributional effects can be even more challenging. Rigorous estimates should incorporate credible baselines, private behavior, and markets for housing, labor, and amenities. Homeownership and locational mobility can matter especially over time.

Consider the pioneering work by V. Kerry Smith et al. done at the time the 2003 Circular A-4 was written. They estimated a general equilibrium willingness to pay for policy scenarios that improve air quality in the Los Angeles area. Benefits were evaluated taking account of the initial air quality, relocation based on changes in ozone, and price changes, particularly rents. An advantage of this approach is that they could rank the 103 school districts by average income and estimate net gains from the air quality improvement at the new equilibrium. They find households in the lowest ranked community lose despite the cleaner air, and that households in high-income Beverly Hills gain the most in absolute value. Comparisons of willingness to pay estimates are made to benefit estimates using a damage function approach with the inherent assumption that households do nothing different in response to the changes in environmental conditions (Smith *et al.*, 2004).¹ Today we have better sorting models, econometrics, computing power, and data, but estimating distributional effects well is still hard.

Estimating distributional effects of environmental regulations has been challenging in understanding environmental justice and related policies. Correlations between pollution exposure and income or pollution and race may be documented, but the mechanism that produces them matters for estimating distributional effects. If correlation exists as a result of residential sorting and residents move and resort as a result of a new regulation, members of

¹ Smith was a peer reviewer of the 2003 Guidance.

the disadvantaged group can be worse off due to gentrification. They initially benefit but then must pay too much more for the housing with more amenities to stay. Spencer Banzhaf, Lala Ma, and Chris Timmins review this effect as well as the effects of going to the nuisance (because of lower rents), Coasian bargaining and others. They write:

Given the current distribution of pollution exposure, the direct effects of environmental improvements will generally be progressive in the sense that the improved quality of life and health should be enjoyed especially by those of lower socioeconomic status. But on the other side, the indirect effects of environmental improvement on housing prices (gentrification) and energy prices may be especially burdensome to the poor (Banzhaf *et al.*, 2019, page 203).

Estimating the distributional effects of proposed regulations is demanding and can produce effects that differ in sign from those based on correlations. Estimating only distributional effects for benefits and failure to estimate distributional effects for costs can distort estimates of net benefits that make advantaged and disadvantaged groups worse off (Banzhaf *et al.*, 2019, page 204). If ex ante analysis indicated that unwanted result, it would suggest the regulation be modified or combined with another public program that mitigates the undesired distributional effect.

Distributional analysis of subsidies can be more manageable than that for regulations when the characteristics of the recipients of rebates and those who pay for the rebates can be identified and measured. For example, the net distributive effect for plug-in electric vehicles in California has been estimated ex post by Ku and Graham (2022). Their distributive analysis shows that the overall net financial impacts of the electric vehicle rebate program are regressive. The cost distribution is slightly progressive, but the distribution of financial benefit distribution is highly regressive. Again, distributional analysis suggests future subsidy programs be (further) modified to mitigate the undesired net effect.

Distributional analysis that incorporates distributions of regulatory costs as well as regulatory benefits could have motivated EPA to combine the promulgation of a new regulation with funding under a nonregulatory program. Cecot (2023) describes a notable example of how EPA acknowledged what she calls a potential equity blind spot with its plans to regulate per- and polyfluoroalkyl substances (PFAS) contamination in drinking water when it announced that there would be limited availability of funds to communities that would have difficulty complying.

Overall, the BCA of regulations can be challenging enough for agencies. The ex ante distributional analysis of net benefits to selected disadvantaged groups or subgroups is harder. It is particularly hard to estimate distributions of regulatory costs. Much work remains before confidence in estimates on the distribution of net benefits becomes the norm.

Recognition of the importance of making progress in distributional analysis of regulatory costs is evidenced by the choice of topic for the SBICA organized session at the Allied Social Sciences Association annual meetings held January 5–7, 2024, in San Antonio, TX:

Title: The Missing Piece: How Are Regulatory Costs Distributed?

Abstract: Much attention is now focused on better understanding how regulatory impacts are distributed across advantaged and disadvantaged populations, yet little attention is being paid to methods for assessing the distribution of costs for individual rules. Understanding how costs initially imposed on industry are distributed across individuals with different incomes or other groups is essential for estimating the extent to which net benefits aggravate or ameliorate existing inequities. Some researchers have investigated the distribution of aggregate costs across many regulations or have assessed the general equilibrium effects of large individual regulations. Little is known, however, about the

extent to which the costs of smaller regulations are passed on as price increases, wage decreases, or reduced returns to capital. The distributional effects of passing on costs via each pathway are also not well-understood. The heightened attention to distribution stems in part from increasing awareness of existing inequities and in part from President Biden's Modernizing Regulatory Review executive order and update of the best practice guidance in OMB's Circular A-4, "Regulatory Analysis." However, similar emphasis can be found in presidential executive orders dating back to 1993, and reviews suggest that little analysis of distributional impacts has been completed.

This roundtable brings together leading experts across policy areas to discuss possible methodological improvements, focusing on U.S. regulations. The panel will also discuss issues related to agency authority to address any inequities they find when they conduct these analyses, given that the lack of such authority may inhibit attention to assessing and addressing these impacts. **Moderator:** Lisa A. Robinson (Harvard University). **Panelists:** Lori Benneer (Duke University), Don Kenkel (Cornell University), Joshua Linn (University of Maryland), David Mitchell (Washington Center for Equitable Growth), and Ann Wolverton (U.S. Environmental Protection Agency).

The point is that distributional analysis of regulatory costs is hard, and much work should be done to advance best practice.

6. Distributional weights and BCA

Distributional analysis should be part of any complete BCA so that decision-makers can make informed decisions about tradeoffs between the expected changes in efficiency and distribution.

The proposed 2023 revision of Circular A-4 and the Preamble to it emphasize distributional analysis in the BCA of regulations. Guidance is given that will likely aid agencies present distributional analysis qualitatively and quantitatively when possible. Given how hard it is to estimate distributional net effects, this guidance will be useful. The Guidance departs from standard benefit–cost practice in the United States by allowing *primary* estimates of net benefits be based on analyst-weighted estimates of benefits and costs with net benefits based on market values relegated to *supplementary* estimates (page 65). The OMB has determined that 1.4 is a reasonable estimate of the income elasticity of marginal utility for use in distributional analysis of regulations in which annual income is the measure disadvantage (page 65). The Preamble particularly makes the case for distributional analysis done this way.

A balanced perspective would not yield as strong a case for a primary estimate of net benefits using analyst-weighted estimates based on parameter 1.4. For example, the description of diminishing marginal utility as representative of consumer behavior is too limited. The additional unit of a good may be less valuable to a person as they have more of it when describing a good such as an ice cream cone. It is less intuitive when thinking about the myriad of market goods and services such as types of foods, clothing, housing, communication devices, travel, entertainment, hobbies, and nonmarket goods such as location-specific amenities, philanthropic contributions, bequests, and more.

Comparison of marginal utilities among individuals is controversial, and diminishing marginal utility does not imply that marginal utility from a specified dollar gain in income for a high-income person will be less than the marginal utility from the same specified dollar

gain in income for a person with less income.² The implication is for two situations for one person, not two different individuals.

It is worth keeping in mind that even with diminishing marginal utility of consumption, income matters. If one is willing to make comparisons among individuals with similar levels of happiness or emotional well-being, a recent study by Matthew A. Killingsworth, Daniel Kahneman, and Barbara Mellers shows that happiness increases with $\log(\text{income})$ throughout almost the entire range of income. At the bottom of the happiness distribution, happiness rises fastest at low levels of $\log(\text{income})$. However, beyond low levels of income, very happy people gain much more with more income than unhappy people. The top part of the distribution of happiness increases with $\log(\text{income})$ more quickly at non-low levels of income compared to the lower 20% of the happiness distribution, which gains little additional happiness (Killingsworth *et al.*, 2023).

Based on my experience, I recommend primary estimates of net benefits be based on market values and that any estimates based on distributional weights, such as weights using 1.4 as an estimate of the income elasticity of marginal utility, be offered as supplementary estimates. The first reason is that the distributional analysis of net benefits is hard and likely to be estimated with less precision and confidence than the overall net benefits. Mixing the distributional estimates with the overall estimates will reduce transparency and convey less useful information to the decision-maker.

The second reason is to preserve the core of the BCA, which has provided crucial information about the allocative efficiency effects of regulations. It may be the sole source of information about overall efficiency in the policy process. The primary net benefit estimate should be based on this core analysis. This core BCA is the regulatory analysis that has survived more than 40 years under seven different presidents. Mixing analysis that weights net benefits based on analyst-specified values risks the integrity of the BCA, which has made it useful.

In a plenary talk at the 2022 Annual Conference of the SBCA, Spencer Banzhaf characterized the tension benefit–cost practitioners face as dealing with the twin callings of scientific objectivity and the art of political economy. Proper balance avoids the clumsiness of recommendations that destroy analytical credibility and avoids overcaution that risks irrelevance. He expressed his concern about assigning distributive weights: “We provide the best service by being as transparent as possible about the ways values influence BCA reasoning, without arrogating political decisions. However, if we pick one “preferred” social welfare function to introduce into BCA, that is exactly what we would be doing. Instead, we can focus on the descriptive, showing the tradeoffs among groups” (Banzhaf, 2023, page 227).

² See H. Spencer Banzhaf, Comment on proposed revision to OMB Circular A-4 (June 16, 2023). <https://www.regulations.gov/comment/OMB-2022-0014-0158>. He writes: “As already suggested, a second problem with the current draft is that it moves too quickly to weighted benefit-cost analysis (sub-section e). Weighted BCA has the potential to be a valuable tool in distributional analysis. But it also raises many uncomfortable questions. In particular, it introduces – even imposes – judgements about the relative value of different groups, judgements which cannot be grounded in facts in the same way as can other aspects of BCA. For example, even if the “curvature” of individuals’ cardinal utility functions is known, it is a philosophical leap from there to the required weights, as Lionel Robbins explained many years ago.* This leap is illustrated by the preamble, which makes the common mistake of stating, “a standard assumption in economics is \$100 for poor increases welfare more than \$100 for a rich person. Actually, the standard assumption is that the same person would value a \$100 more if poor than if rich. The leap is from that claim to the interpersonal comparisons” (Robbins, 1935).*

Anthony Boardman et al. offer the same recommendation to treat distributional impacts separately from effects on allocative efficiency. Their view is that combining them into a single metric obfuscates the importance of each and reduces the value of the analysis to decision-makers. They see no agreement on the most appropriate social welfare function or its parameter values. They suggest a multi-goal analysis that takes into account effects on efficiency and distribution and possibly other factors that could be used to complement the primary core of BCA (Boardman *et al.*, 2020).

By design, OMB influences the type of regulatory analysis that will be done within the agencies that promulgate regulations. In revising Circular A-4, OMB should be sensitive to the possible types of roles that agency economists and analysts will be induced to play. They may view themselves as objective technicians equipped to perform BCA according to the highest professional standards. They may view themselves as advocates for the causes they embrace. They may view themselves as team playing proponents of policies adopted by their agencies.³ By encouraging agency analysts to use distributional weights in the primary analysis of net benefits, OMB is pushing them to rebalance their roles toward more team playing at the potential cost of scientific objectivity that allowed BCA of regulations to endure through agencies serving many administrations.⁴

To me, the primary estimates of net benefits must be based on the core of BCA. Distributive weights in regulatory BCA for supplementary estimates can be a way to present distributional effects.

7. Scope of analysis

The 2003 Circular A-4 covers scope of analysis with one paragraph under General Issues (page 15):

Your analysis *should focus on benefits and costs that accrue to citizens and residents of the United States*. Where you choose to evaluate a regulation that is likely to *have effects beyond the borders of the United States, these effects should be reported separately*. The time frame for your analysis should cover a period long enough to encompass all the important benefits and costs likely to result from the rule. (my italics)

The proposed 2023 revision of Circular A-4 devotes approximately three pages to the scope of analysis. Most new material is related to environmental and energy regulation designed to address carbon emissions and climate change. Regulatory effects are described to include domestic effects from regulations on foreign firms, effects on changes in foreign ecosystem services that affect U.S. citizens and residents, effects on U.S. strategic interests, and effects when they affect U.S. citizens residing abroad. Supplementary analysis could include effects on noncitizens residing abroad. Effects on noncitizens residing abroad can be

³ These characterizations and their implications for behavior are based on Jenkins-Smith (1982).

⁴ A public comment has been submitted by Paul Joskow and 11 colleagues at MIT, see <https://www.regulations.gov/comment/OMB-2022-0014-0096>. Due to problems associated with using income to rank households and others they do not support the routine use of distributional weights. Instead, they recommend: “when distributional effects are relevant to the agency’s decision, you should summarize your results and describe your analysis in a manner that supports transparency and comprehensibility for policymakers and the public.” Providing distributional tables similar to those provided by the Joint Committee on Taxation when assessing the impacts of revisions to the tax code.

included in the primary estimates of benefits and costs under some conditions, including when they are not easily separated from effects on U.S. citizens.

The change in scope to include noncitizens residing abroad is huge, and it matters for estimating the benefits of regulation. My assessment is that the issue is mostly an issue of standing, that is, whose benefits and costs count in the BCA. The proposed change is potentially prodigious if the agency determines that effects on citizens and residents and beyond the borders of the United States cannot be separated from effects on “noncitizens residing abroad” in a practical and reasonably accurate manner. The implication is that all global effects should all be included in the primary analysis (page 10). For example, an estimate of the social cost of carbon increases roughly sevenfold when scope is expanded from domestic to global (Rennert & Kingdom, 2019).

A preferred approach would be to have the focus of the primary analysis be on benefits and costs about which we know the most in terms of direct effects and on the value of them to U.S. citizens and residents within the borders of the United States. Regulations that reduce carbon emissions are a public good with global effects, but the value of the effects U.S. citizens and residents depends on where risks of floods, fires, hurricanes, heat waves, and other consequences of climate change take place. Attempts to estimate how much more benefits are than the domestic value or how much less benefits are than the global value should be guided by the willingness to pay by U.S. citizens and residents.⁵

The willingness to pay to reduce risks of such unwanted events are likely greater for avoiding them within the borders of the United States than in other hemispheres. They would be akin to use values in willingness to pay for recreation at U.S. parks. Use value could extend beyond U.S. borders where direct links exist because of spatial proximity. For example, U.S. citizens might have willingness to pay to reduce Canadian forest fires that produce hazardous air quality in the United States.

The willingness to pay values of U.S. citizens and residents of the types and magnitudes of regulatory effects on noncitizens residing abroad compared to values within U.S. borders are also likely to depend on spatial proximity to the United States. Effects on noncitizens residing in Canada and Mexico, for example, are likely to be valued by individuals and decision-makers in the United States more than effects on noncitizens residing on other continents. They are neighbors close by.

Evidence exists that distance matters. A recent stated preference study by Vossler *et al.* (2023) estimated the total economic value (use and nonuse) for a range of aquatic ecosystem improvements that varied by location, spatial scale, and scope of water quality change. They found that people were willing to pay twice as much for an improvement in a watershed nearby compared to one further away. In addition, they found that extending the spatial scale beyond the home watershed did not yield additional benefits to the household (see also Johnston *et al.*, 2023). Willingness to pay declines with distance for regional water quality improvements. The willingness of U.S. citizens and residents to pay for reduced risks of climate-related unwanted events is also likely to decline with distance from the United

⁵ Art Fraas, John Graham, Kerry Krutilla, Randy Lutter, Jay Shogren, and Linda Thunström offer a detailed public comment on the proposed 2023 Guidance. <https://www.regulations.gov/comment/OMB-2022-0014-3917>. They note that exclusive focus on global benefit and costs estimates is tantamount to assuming that U.S. citizens and residents and policymakers are indifferent whether effects occur within the U.S. or anywhere else in the world. They envision modeling at a regional scale “soft-linked” to an Integrative Assessment Model in order to estimate domestic and global estimates. They urge that both domestic and global estimates be made to inform policymakers.

States. It will also depend on special features. People contribute to the Nature Conservancy to protect the Amazon, for example.

The willingness to pay values by U.S. citizens and residents of the types and magnitudes of regulatory effects on noncitizens residing abroad compared to values within U.S. borders are also likely to depend partly on geopolitical factors. The effects on noncitizens residing in countries, such as Canada, Mexico, Germany, Finland, and Sweden are likely to be valued by individuals and decision-makers in the United States more than the effects on noncitizens residing in other countries. U.S. relations with them are good. Effects on noncitizens residing in sanctioned countries such as Iran, North Korea, and Russia are likely to be valued less.

The 2023 proposed revised Guidance allows regulatory effects expected to be experienced by nonresidents residing abroad to be included in the primary estimates of net benefits. They are allowed if regulating an externality on the basis of global effects supports a cooperative international approach that potentially could induce other countries to follow suit (page 10).

The willingness to pay values by U.S. citizens and residents to adopt a global value of benefits to increase the probability of more desirable international agreements to which all countries comply may be positive. However, those values are likely to depend on the probability of reaching an agreement and expected compliance. Expected compliance matters because, given the absence of a global governmental sovereign, compliance has an inherent voluntary component. An estimate of willingness to pay of U.S. citizens and residents for expected benefits to them of greater international cooperative might inform international negotiations. Given the difficulty in estimating such a benefit, a qualitative description might be more useful to decision-makers than including it in a supplemental quantitative analysis.⁶

The primary analysis should focus on benefits and costs to U.S. citizens and residents within the borders of the United States.⁷

As a postscript, I add that there is an almost unique piece of (soft) evidence that willingness to pay by U.S. citizens and residents exists beyond private contributions to organizations such as the Nature Conservancy. The *Wall Street Journal* bills it as the largest public statement of economists in history; 3,640 of us economists in the United States have signed “The Economists Statement on Carbon Dividends,” see <https://clccouncil.org/economists-statement/>. Two recommendations are particularly important for me.

“A sufficiently robust and gradually rising carbon tax will replace the need for various carbon regulations that are less efficient. Substituting a price signal for cumbersome regulations will promote economic growth and provide the regulatory certainty companies need for long-term investment in clean-energy alternatives.” BCA would continue to be useful for remaining regulations.

⁶ Economic and legal issues regarding benefits and costs beyond U.S. borders are analyzed for social cost of carbon and other environmental regulations (see Gayer & Viscusi, 2016).

⁷ In public comment, V. Kerry Smith contends that expanding the scope of a benefit cost analysis to include effects on noncitizens residing abroad without a specific international agreement, approved by Congress, changes the nature of the policy being evaluated. Domestic policies concerning global externalities or public goods should be evaluated based on effects on citizens and residents of the U.S. and noncitizens residing abroad do not bear the costs of U.S. policy. His view is that discretion regarding standing converts the analyst to the policymaker and undermines the value of the benefit-cost analysis to the policymaker, see <https://www.regulations.gov/comment/OMB-2022-0014-0079>.

“To maximize the fairness and political viability of a rising carbon tax, all the revenue should be returned directly to U.S. citizens through equal lump-sum rebates. The majority of American families, including the most vulnerable, will benefit financially by receiving more in “carbon dividends” than they pay in increased energy prices.” I have described how difficult it can be to estimate distribution effects well, especially for the costs of regulations. The equal lump-sum rebates will mitigate undesired distributional costs. Success in implementing the set of stimulus payments during the COVID-19 pandemic showed that we make payments directly to citizens.

This evidence is not from a revealed or stated preference study, or a lab or field experiment, of a representative population, but as a proxy for informed, heterogeneous U.S. citizens and residents, it is a meaningful signal that people are willing to pay to mitigate unwanted effects from climate change. It is not a signal about the willingness to pay for net benefits beyond U.S. borders.

8. Discount rates

The 2003 Circular A-4 draws on OMB Circular A-94 that a real discount rate of 7 % should be used as a base-case for regulatory analysis. It is an estimate of the average before-tax rate of return to private capital in the U.S. economy (page 33). Circular A-4 goes on to say that over the last 30 years (before 2003), the real rate on long-term debt has averaged around 3 % on a pretax basis. The guidance given is that for regulatory analysis, you should provide estimates of net benefits using both 3 % and 7 % (page 34). For regulations expected to have important intergenerational benefits or costs guidance is given, that you might consider a further sensitivity analysis using a lower but positive discount rate in addition to calculating net benefits using discount rates of 3 % and 7 % (page 36).

The proposed 2023 revision of Circular A-4 sets a default rate for social rate of time preference of 1.7% real discount rate based on a 30-year average of the 10-year real U.S. Treasury note rate. It applies to effect up to 30 years in the future. Long-term discounting is covered in an additional section.

The default rate of 1.7% is 530 basis points below the 2003 base-case rate of 7 % and 130 basis points below the alternative 2003 rate of 3 %. Discounting is not an area in which I have done research, but based on my understanding, the 1.7 % simply seems too low for representing tradeoffs for the U.S. society. Rereading Arnold Harberger and Glenn Jenkins on the social discount rate offers one explanation. It is that a low rate, such as 1.7 % rate probably does not reflect rates for all members of society. It can reflect time preference for those who supply funds to the capital market through Treasury Inflation Protected Securities (TIPS). The relevant rate for all of society, however, should include the many persons who do not invest in TIPS. It should also include borrowers for whom the relevant rates are their credit card and mortgage rates.⁸ Especially given the emphasis on distributive effects in the

⁸ Art Fraas, John Graham, Kerry Krutilla, Randy Lutter, Jay Shogren, and Linda Thunström offer a detailed public comment on the proposed 2023 Guidance. <https://www.regulations.gov/comment/OMB-2022-0014-3917>. Their view is that the market for TIPS is not an appropriate way to measure discount rates for U.S. households because only a small share holds these Treasury securities. They report that for families below the 60th percentile, 99 percent have zero direct bond holdings for 2019. Holdings of certificates of deposit and savings bonds are less than 8 % for families below the 60th percentile. They recommend adopting a real discount rate of 3 % with 5 % for sensitivity analysis.

proposed 2023 revision, care should be given to include persons facing rates much higher than 1.7 %. Harberger and Jenkins judge that the social rate of discount that includes all members of society is well in excess of 2 % or 3% in real terms and an estimate for advanced countries such as the United States the rate averages about 8 % (Harberger & Jenkins, 2015).

The guidance for a default rate should be higher than 1.7% and one that reflects all members of society. I suspect an inclusive rate would be higher than the TIPS rate. Given a lack of consensus, guidance should be given for at least one alternative rate for sensitivity analysis of this crucial input into the BCA.

William Nordhaus public comment <https://www.regulations.gov/comment/OMB-2022-0014-0089> deserves careful consideration. His contributions and influence on United States and international science of climate change and economics more broadly are vast. His comment goes deep into finance, but I understand several key points. He is skeptical of the methodology used to support the proposed guidance on rulemaking, including discounting, because it is not a settled science. By relying on the consumption capital asset pricing model approach, the risk premium on investments that have returns correlated with aggregate market and correlated risks. It reflects a “capital-premium puzzle” analogous to the “equity-premium puzzle.” There is no evidence in the proposed 2023 guidance that would lead to selecting as a default discount rate the risk-free rate of return rather than the returns associated with average investment. The bottom line is an appropriate discount rate would be a real risk-free rate of about 1 % plus a risk premium of about 3 % or 4 % for a discount rate for analysis of about 4 % or 5 %.

The Harberger and Jenkins analysis and Nordhaus analysis, at least my reading of them, imply that the suggested default rate of discount should be at least twice the proposed 1.7 %.

9. Behavioral biases and nudges

The 2003 Circular A-4 mentions behavioral economics only once in the context of willingness to pay and willingness to accept measures of value (page 18). The proposed 2023 revision of Circular A-4 adds addressing behavioral biases as motivation for regulation on a par with traditional market failures. Behavioral biases are described as limits on information processing and decision-making biases (pages 15 and 18). Informational approaches and nudges are offered as one alternative regulatory approach. Guidance is given that specific regulatory measures should be matched to the underlying problem and that specific regulatory measures are subject to BCA like other regulatory actions (pages 25–26).

Behavioral economics has contributed to our understanding of the choices people make. Nudges have been used to increase contributions to retirement plans and vaccination rates. Stefano DellaVigna and Elizabeth Linos analyze data from two nudge units and make comparisons to nudge results from studies published in academic journals. Both types of studies show increases in the take-up effect, but the average impact of 8 % is much smaller for the larger randomized controlled trials (RCTs) than the 33 % impact for the academic studies. They attributed most of the difference (about 70 %) to selection in the academic journal publication process (DellaVigna & Linos, 2022). The meta-analysis by Maier *et al.* (2022) of more than 200 studies of nudge interventions find no evidence that nudges are effective tools for behavior change.

I claim little expertise on nudges, but these results point to the onus on making the case the specific nudge will successfully address the perceived problem just as the onus is on a

specific regulatory measure will successfully address a perceived market failure.⁹ The proposed 2023 revision to Circular A-4 already has useful references such as works by Weimer (2017) and Robinson and Hammitt (2011). It would be more helpful to agencies with the addition of two more references to augment the current list.

Kip Viscusi and Ted Gayer extend the concept and practice of benefit transfer to “behavioral transfer” with an emphasis on the challenge of applying results from a behavioral study in one context to another potentially different subpopulation or broader population. They discuss behavioral transfer for discounting anomalies, biases in risk beliefs, ambiguity aversion, and experienced utility (Viscusi & Gayer, 2016).

John List, Omar Al-Ubaydli, and Dana Suskind offer “BIG5” factors to consider in order to get behavior interventions to work when scaled up from smaller settings, that is, high-voltage impact. The factors are inference from intervention replications, representativeness of the population, representativeness of the situation, spillovers and general equilibrium effects, and economies and diseconomies of scale (Al-Ubaydli *et al.*, 2017; List, 2021).

These sources along with the guidance given in the proposed 2023 Circular A-4, could increase the probability of regulatory nudges that work and generate desired net benefits.

10. Monetizing health and safety benefits and costs

Keeping in mind that no changes are anticipated for this section of Circular A-4, I have but a few additions and updates.

Page 48, section i: Add Cameron and DeShazo (2013).

Page 49, footnote 82: Add Banzhaf (2022).

Risks to Children: Guidance that monetary values of changes in risks to children be at least as large as values for adults is still good. Evidence available since 2003 hints that values for children are greater, but agencies should take care that it is useful for the regulation being considered, especially if the same regulation affects persons other than children.

Page 51, footnote 87: Add Robinson *et al.* (2019).

11. Marginal cost of public funds

The proposed 2023 revision to Circular A-4 discusses the treatment of transfers and advises against adjusting the estimates of net benefits of a regulation due to changes in government spending (pages 57–61). Part of the rationale is that regulations are not expected to produce large changes in government spending compared to publicly funded expenditure programs to build transportation infrastructure or provide health care to children. The discussion on page 61 might be read to imply that agencies can ignore the marginal cost of public funds.

⁹Don Kenkel has provided comprehensive on the proposed 2023 Guidance with an extensive section on behavioral economic and benefit-cost analysis. <https://www.regulations.gov/comment/OMB-2022-0014-3910>. He reviews early warnings from Camerer about paternalistic regulations and Bernheim and Rangel the danger of using value judgments to determine if there are behavioral failures. Difficulties applying behavioral welfare economics to tobacco regulation and automobile fuel efficiency regulation are recounted. They exemplify reasons for the onus on those who propose a specific nudge or intervention. His recommendation is to not allow agencies to use behavioral bias or externalities as a key motivation for regulation or as a key part of quantification of regulatory benefits.

Boardman *et al.* (2020) advise that the marginal cost of public funds should be included when there are substantial changes in expenditure and review existing estimates. The midpoint estimates for the United States range from 1.1 to 1.4. García and Heckman (2022) also advise including effects of marginal excess tax burden associated with government expenditures and include it their benefit–cost estimates. I note that the Best Journal of Benefit-Cost Article Award for 2022 went to Garfinkel *et al.* (2022) for their article “The Benefits and Costs of a Child Allowance”. Adjustment is made for the marginal cost of public funds.

Changes in government expenditures associated with regulations might become more important as agencies consider pairing new regulations with new funding. In the section on the difficulty in estimating distributional costs of regulations, I briefly noted an example of EPA coordinating a new regulation on PFAS that can contaminate drinking water with funds to communities that would have difficulty complying (Cecot, 2023). Presumably, BCA would consider these as two parts of a single action since both are within the same agency.

Changes in government expenditures should be considered across jurisdictions (page 64, footnote 110). A regulation can impact tax collection at the state and local levels as well as the federal level. Different tax structures in different jurisdictions can lead to different distributive impacts across different states, cities, and rural areas. Financing of public schools could be impacted. The distributional analysis should include these effects when important.

12. Nonmonetized benefits and costs

Any measurement and valuation of human dignity, civil rights, liberties, or indigenous cultures would have to be done with care and sensitivity. Any such effort would have to be done with appropriate safeguards and approvals. A suggestion is to continue to watch for progress in estimating benefits and costs in money terms. Some exploratory efforts have been made by Ponomarenko and Friedman ((2017) to incorporate these values into the BCA of policing practices. Some policing practices potentially involve tradeoffs between dignity, civil rights, and liberties for expected reductions in crime. Carson and Louviere (2017) offer a study design meant to measure the tradeoffs.

13. Guidance: Past, present, and future

After years of teaching BCA and pointing to Circular A-4 as exemplary in many ways, I am pleased to see the effort to update the Guidance. Advances in benefit estimations, especially in valuation using stated preferences, as well as other areas make updating worthwhile. My view is that some, but not all, proposed changes are as well grounded. The proposed 2023 A-4 and Preamble present and make the cases for changes in distributional analysis, scope, discounting, and motives for regulation that go beyond updating. Rationale and references are provided to support those cases, as we expect in a key document. My review acknowledges them and provides additional rationale and references that do not always support updates. Based on my assessment of all information, I recommend retaining the relevant sections of the current Circular A-4.

I offer my perspective on the proposed revisions with the hope that a new guidance may have the enduring success of the 2003 Guidance. On May 9, the Society for Benefit-Cost

Analysis and the GW Regulatory Studies Center offered a discussion of recent proposed changes to regulatory practices and analysis, see <https://regulatorystudies.columbia.gwu.edu/revising-regulatory-review-expert-insights-biden-administrations-guidelines-regulatory-analysis>. The two panel sessions included Richard Revesz, Administrator, OIRA, Paul Ray, Boris Bershteyn, Susan Dudley, Sally Katzen, Bridget Dooling, Howard Beales, Randy Lutter, Dominic Mancini, Sabeel Rahman, Shayna Strom, and Caroline Cecot. I heard various views on different parts of the proposed revisions. At the same time, I heard widespread admiration for the current guidance, which has survived for more than 20 years, and hope that the final version of the new Circular A-4 is as successful.¹⁰

Circular A-4, whether in its current version or revised, can provide valuable guidance in performing BCA of proposed and existing regulations. What it cannot do is to provide specific guidance to situations when possible outcomes of decisions cannot be identified and when high (positive or negative) payoffs are associated with these outcomes, called consequential amazing developments (CADs) by Devjani Roy and Richard Zeckhauser. They illustrate ways in which literature, because it mirrors life, provides a rich and available universe of decisions that helps us anticipate and confront CADs. Such thinking can be a valuable complement to regulatory guidance of the future (Roy & Zeckhauser, 2015).

14. Short Additions and edits

Page 3: Distribution effects should be listed as a key step in producing a regulatory analysis. Distributional analysis is part of the 2003 Circular A-4 (page 14), and the proposed revision gives greater emphasis to distributional analysis. It should be identified as a key element.

Page 16, line 4 of first paragraph: “(when applicable)” awkward and seems unnecessary.

Page 18, footnote 31: A helpful additional reference would be Cawley and Philopson (1999).

Pages 19 and 20. Editorial Comment. The two short sections Promoting Distributional Fairness and Advancing Equity and Protecting Civil Rights and Civil Liberties or Advancing Democratic Values seem out of place. They deal with laudable goals but offer no guidance to agencies regarding promulgating regulations.

Page 20, second paragraph in section b: “If the analysis goes beyond the need for regulation you should endeavor to describe it.” If it is not on the list of the reasons for regulation, what is unique about the situation so that it is not recognized as a reason for regulation?

Page 20, second paragraph in section b: “You could also integrate estimates of distributional effects into your analysis.” If done, for transparency I recommend that it be a separate, supplemental analysis presented along with the traditional analysis with market values and does not use weights chosen by the agency.

Page 23, top: Need a citation to the 1998 DOE energy efficiency standards. Was there an ex post BCA done on the standard? If so, what did it show?

Page 29: Explanation of the key concepts needed to estimate benefits and costs would be strengthened by with reference to two standard publications. One is a classic article by a past

¹⁰ In a public comment submitted, Susan Dudley describes the remarkable durability and stability of regulatory impact analysis in the U.S., see <https://www.regulations.gov/comment/OMB-2022-0014-0129>.

President of the American Economic Association, see Harberger (1971). The other is the chapter on basic economics of benefit-cost analysis in Boardman *et al.* (2018).

Page 40, footnote 72: Accounting for effects in other locations can matter even without distortions in related markets. A study of the effects of building interstate highways on economic activities in different locations that illustrates this importance well is the following article: Chandra and Thompson (2000). Reference to it might be helpful to agencies.

Page 66, 114. “An appropriate weighting for effects on government budgets depends on the use or source of funds, which will often be indeterminant in regulatory contexts.” Indeterminant does not mean effects are zero.

Pages 69 bottom–70 top: Clarification or correction is warranted. For regulations with projected annual economic effects of \$1 billion or more ... present a formal quantitative analysis. Then, for regulations with projected gross annual benefits, costs, or transfers of \$200 million to \$1 billion, you should seek to use more rigorous approaches ... What is more rigorous than a formal quantitative analysis and why call for more rigor for the regulations with smaller projected impacts?

15. Epilogue

My review just presented, was submitted to OIRA and OMB through ICF International along with the other peer reviews by Joseph Aldy, Cary Coglianese, Joseph Cordes, R. Scott Farrow, Kenneth Gillingham, William Pizer, Christina Romer, and W. Kip Viscusi. We were asked to respond to any part of the draft guidance and preamble and invited to comment on several “notable proposed updates.” The update topics were: (1) discount rate, (2) distributional analysis, (3) scope of analysis, including geographic scope, (4) development of analytical baselines, (5) unquantified impacts, and (6) uncertainty.

Although all nine of us wrote on a variety of theoretical, empirical, and practical issues, I was especially curious to learn what insights this group might have on the six notable proposed updates. The opportunity to learn provided the incentive for me to write a synopsis of our reviews on these topics. This synopsis, “What OIRA Peer Reviewers Advised Regarding Notable Proposed Updates to Circular A-4: An Ignored Consensus?,” is part of this special issue of the *Journal of Benefit-Cost Analysis*. I invite you to make your own assessment of the impact of the advice of the peer reviewers on the final, November 9, 2023 version of Circular A-4 “Regulatory Analysis.”

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