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# Assessing the Quality of Regulatory Impact Analyses

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J O I N T  C E N T E R

In response to growing concerns about understanding the impact of regulation on consumers, business, and government, the American Enterprise Institute and the Brookings Institution have established the AEI-Brookings Joint Center for Regulatory Studies. The primary purpose of the center is to hold lawmakers and regulators more accountable by providing thoughtful, objective analysis of existing regulatory programs and new regulatory proposals. The Joint Center builds on AEI's and Brookings's impressive body of work over the past three decades that has evaluated the economic impact of regulation and offered constructive suggestions for implementing reforms to enhance productivity and consumer welfare. The views in Joint Center publications are those of the authors and do not necessarily reflect the views of the staff, council of academic advisers, or fellows.

## Executive Summary

This study provides the most comprehensive evaluation of the quality of recent economic analyses that agencies conduct before finalizing major regulations. We construct a new dataset that includes analyses of forty-eight major health, safety, and environmental regulations from mid-1996 to mid-1999. This dataset provides detailed information on a variety of issues, including an agency's treatment of benefits, costs, net benefits, discounting, and uncertainty.

We use this dataset to assess the quality of recent economic analyses and to determine the extent to which they are consistent with President Clinton's Executive Order 12866 and the benefit-cost guidelines issued by the Office of Management and Budget (OMB).

We find that economic analyses prepared by regulatory agencies typically do not provide enough information to make decisions that will maximize the efficiency or effectiveness of a rule. Agencies quantified net benefits for only 29 percent of the rules. Agencies failed to discuss alternatives in 27 percent of the rules and quantified costs and benefits of alternatives in only 31 percent of the rules. Our findings strongly suggest that agencies generally failed to comply with the executive order and adhere to the OMB guidelines. We offer specific suggestions for improving the quality of analysis and the transparency of the regulatory process, including writing clear executive summaries, making analyses available on the Internet, providing more careful consideration of alternatives to a regulation, and estimating net benefits of a regulation when data on costs and benefits are provided.

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## 1. Introduction

The impact of federal regulation has increased dramatically over the past thirty years. The cost of federal environmental, health, and safety regulation is currently on the order of $200 billion annually.[1] To put that in perspective, the total nondefense domestic discretionary spending budget was just 50 percent greater.[2] Yet, the economic impacts of federal regulation receive much less scrutiny than discretionary programs in the budget.

Recognizing that better economic analysis can potentially improve regulatory outcomes, Presidents Reagan, Bush, and Clinton ordered agencies to provide a regulatory impact analysis (RIA) for all economically significant proposed rules.[3] Done well, those analyses can help agencies identify regulatory alternatives that are more effective and enhance economic efficiency. The analyses can also hold regulators and lawmakers more accountable for their actions. The Office of Management and Budget (OMB) has been assigned the task of reviewing draft regulations to ensure that they are consistent with executive orders. As part of the process, OMB reviews draft RIAs produced by the

[1] See Arrow (1996) and OMB (1999a).
[2] See Joint Economic Committee Study (1999). All dollars figures are presented as constant 1999 dollars, adjusted by using the consumer price index.
[3] Executive Order 12866 uses the term assessment in place of regulatory impact analysis, the term used in Reagan's Executive Order 12291 (Reagan, 1981) and still used by many agencies to refer to the economic analysis agencies complete before proposing or finalizing major rules. The agencies publish the results of their economic analysis in the RIA and in the *Federal Register* notice. When we refer to the economic analysis, we are referring to the analysis in either or both sources. According to Executive Order 12866, an agency must produce an economic analysis if the rule is expected to "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." We use the terms *rule* and *regulation* interchangeably.

agency. Several scholars have noted, however, that the quality of such analyses varies across a wide range.[4]

This study provides the most comprehensive, systematic evaluation of the quality of economic analysis that agencies conduct on the basis of a new dataset of almost all major health, safety, and environmental regulations from mid-1996 to mid-1999.[5] The study also provides detailed information on a variety of issues, including agencies' treatment of benefits, costs, net benefits, discounting, and uncertainty.[6]

The study was undertaken as the first phase of the Joint Center Regulatory Improvement Project. The primary aim of this project is to enhance regulatory accountability and transparency by making information about regulations more readily available on the Internet. The project has two objectives: first, to provide information on the quality of recent regulatory impact analyses; and second, to provide information to interested parties on specific regulatory analyses.[7] Both this paper and the database used for this analysis can be viewed and downloaded from the Joint Center web site at www.aei.brookings.org.[8]

An appreciation of the kind and quality of information contained in the agencies' economic analyses can help provide insights into how the regulatory analyses could be improved and how summaries of regulatory analyses could help inform interested parties.[9] We score each economic analysis in a variety of dimensions. We then aggregate

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[4] See, for example, Hahn (1996) and Morgenstern (1997).
[5] The dataset includes regulations from April 1996 through July 1999.
[6] The approach is similar to that contained in Hahn (1999a) and Hahn (1999b) but provides more details.
[7] In addition to assessing the quality of analysis, the Joint Center Regulatory Improvement Project will provide interested parties with information and links that will make it easier to understand and investigate the impacts of specific regulations.
[8] The database includes links to the full text of the rules, the RIA when available, and the data used in this paper. See the website for more information.
[9] We have opted for measures of quality that are, arguably, objective, in the sense that others could reproduce our results–if not exactly, then at least approximately. While such measures are informative, they

this information from many regulations into a regulatory scorecard. The scorecard provides an overview of different kinds of information contained in the agencies' economic analyses.

We find that economic analyses prepared by regulatory agencies typically do not provide enough information to make decisions that will maximize the efficiency or effectiveness of a rule. While a sound analytical justification may exist for failing to comply with the guidelines in specific instances, our findings strongly suggest that agencies generally failed to comply with the executive order and adhere to the OMB (1996) guidelines.[10]

Agencies frequently fail to report the net benefits of a rule or give adequate consideration to alternatives. Net benefits are defined as the dollar value of benefits minus costs. That value is an important indicator of the extent to which a regulation is likely to enhance economic efficiency. Agencies quantified net benefits for only 29 percent of the rules. Agencies failed to discuss alternatives in 27 percent of the rules and quantified costs and benefits of alternatives in only 31 percent of the rules. We offer specific suggestions for improving the quality of analysis and the transparency of the regulatory process, including writing clear executive summaries, making analyses available on the Internet, providing more careful consideration of alternatives to a regulation, and estimating net benefits of a regulation when data on costs and benefits are provided.

Section 2 of the paper reviews our methodology. Results appear in section 3. Finally, section 4 reviews the key conclusions and offers policy recommendations.

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are far from complete. It is quite possible, for example, for a regulatory analysis to score well on the dimensions identified below but be done very poorly. We address that issue later.

[10] The term executive order refers to President Clinton's Executive Order 12866 (Clinton, 1993).

## 2. **Methodology**

Many studies have assessed the quality of agencies' economic analyses.[11] By focusing on an individual or a small group of analyses, scholars have provided a detailed assessment of the strength and weaknesses of particular analyses. This case study approach allows researchers to question key assumptions and assess the appropriateness and application of models used in particular analyses. In this study, we choose to assess the quality of many economic analyses using a different approach that takes the government's numbers and categorization as given. Such an approach has the benefit of being more reproducible than a critique by experts. At the same time, that approach cannot address some critical issues related to quality, such as identifying sources of bias in the estimates or the correct framing of the problem.

This paper will examine the extent to which agencies' economic analyses issued from mid-1996 through mid-1999 meet the government's own standards for analysis. Those standards are discussed in two places: Executive Order 12866, in which President Clinton redefined the nature of the regulatory analysis function OMB performs, and in the OMB guidelines, which specify best practices for implementing the executive order.[12] The executive order requires agencies to include the following information in their analysis: a statement of the potential need for the proposal, an examination of alternative approaches, an assessment of benefits and costs, the rationale for choosing the regulatory action, and a statement of statutory authority.[13]

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[11] For a review of several economic analyses, see General Accounting Office (1984), EPA (1986), Fraas (1991), and Morgenstern (1997). Smith (1984) provides a review of the regulatory oversight process.
[12] Section (F)(7)(d) of the executive order requires the OMB to provide agencies guidance in writing economic analyses. The OMB convened an interagency group to describe the best practices for preparing economic analyses. The results of that effort were presented in a paper in January 1996. This paper will be referred to as the OMB (1996) guidelines.
[13] The Unfunded Mandates Reform Act of 1995, which applies to many of the rules considered here, also requires an economic analysis that includes a quantification of impacts and consideration of alternatives.

This study focuses on the extent to which agencies quantify benefits and costs and assess alternatives, two key requirements of the executive order. The order states that agencies shall provide "an assessment, including the underlying analysis," of benefits and costs expected from a regulation and, "to the extent feasible" provide a quantification of those benefits and costs.[14] The OMB guidelines further direct agencies to express benefits and costs in monetary terms "to the fullest extent possible."[15] To quantify agency compliance with the executive order, this study measures the extent to which agencies have quantified and monetized the impacts of regulations.[16]

One of the primary purposes of the requirement to quantify the benefits and costs is to assist the agency in selecting among regulatory alternatives. The executive order states that "agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating."[17] The order requires economic analyses to provide sufficient information to demonstrate that the agency is selecting the regulatory approach that maximizes net benefits, unless prohibited by statute.[18] The language in the order is vague and requires interpretation. While several interpretations are possible, this paper uses an economic interpretation, the specifics of which the OMB guidelines set forth.[19] This study measures the extent to which agencies have met this

[14] See Clinton (1993).
[15] See OMB (1996). The OMB guidelines discuss principles for putting an explicit value on benefits that are difficult to monetize, such as environmental amenities.
[16] Both the executive order and the OMB guidelines note that it is not always possible or desirable to monetize all benefits and costs.
[17] See Clinton (1993).
[18] The executive order states that "agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributional impacts; and equity), unless a statute requires another regulatory approach."
[19] The OMB guidelines describe specific steps to comply with this mandate including the choice of alternatives to analyze. Agencies are urged to define carefully the proper baseline, discuss uncertainty and bias in estimates, and carefully describe key assumptions used in developing estimates of benefits and costs (OMB, 1996).

requirement of the executive order by assessing cost and benefits of different alternatives.[20]

To examine the extent to which an analysis met the requirements of the executive order, we developed an evaluation worksheet that is summarized in table 1. The scorer determined whether an agency evaluated costs, benefits, net benefits, and alternatives to a rule by reading each *Federal Register* notice and RIA from the database.[21] If an analysis scores well using our criteria, it does not follow that it is necessarily of high quality; however, if several analyses score poorly, that raises cause for concern–particularly if key economic variables are not assessed, such as the net benefits of a regulation.

Objective criteria, such as determining whether an agency used a consistent dollar year or discount rate, ensured that the results could be replicated. In addition, researchers peer-reviewed all judgments made in filling out the worksheet. The analysts resolved disagreements and established clear guidelines, which are presented in the online database. Given the complexity of many of the analyses, some errors are likely.[22]

Another problem arises in establishing consistent criteria by which to evaluate agency compliance. Defining what was meant by "discussed alternatives" was relatively easy; an agency simply must mention the existence of alternative regulatory approaches.

[20] While agencies may present reasons not to quantify and monetize benefits and costs, and not consider alternatives for individual regulations, we believe they should be able to meet those requirements of the executive order for a majority of regulations. We recognize that there may be cases where it is very difficult to quantify benefits and costs and that a qualitative measure may be of value. Some of those cases appear in the OMB guidelines.

[21] When a discrepancy existed between the numbers presented in the *Federal Register* and the RIA, we used the *Federal Register* number because it is the official publication for agency documents. In addition, agencies incorporate OMB's comments into the *Federal Register* notice but do not always update the RIA.

[22] Suggestions should be submitted on the AEI-Brookings website at www.aei.brookings.org.

e we feel this measure contains some useful information, we recognize that it is more subjective and have not included it in the analysis presented here. For completeness, we have decided to include all categories in the database.[24]

The database contains almost all economically significant non-transfer rules finalized between April 1996 and July 1999.[25] We excluded transfer rules because they tend to focus explicitly on the transfer of wealth to specific groups, whereas nontransfer rules tend to focus on achieving regulatory objectives such as cleaner air.[26] We examined the nontransfer rules because they tend to be the focus of serious economic analysis and are most relevant for applying the benefit-cost requirements of the executive order and the OMB guidelines.

We included only economically significant rules in the database for two reasons. First, economically significant rules typically have annual costs or benefits in excess of $100 million per year. These rules therefore have the largest impact on society and

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[23] In EPA's "Federal Test Procedure Revisions" rule, for example, the agency did not discuss alternatives, except to claim the option selected "is the most cost-effective alternative currently available" and to refer the reader to a discussion elsewhere. In this case, the rule was scored as considering alternatives.

[24] Researchers using this database should consult the definitions for an explanation of the criteria used for scoring purposes.

[25] We obtained from OMB a list of all the rules that OMB reviewed in the past four years (OMB, 1999b). From that list, we eliminated all transfer rules and rules without an economic analysis. We then selected the economically significant rules that were finalized between the beginning of April 1996 and the end of July 1999. The criteria we used for including a rule in our database are similar to OMB's criteria for major "Environmental" and "Other Social" rules (OMB, 1999a). In several cases, an agency finalized an economically significant rule but did not produce an economic analysis because Congress prohibited funding the analysis. See, for example, the Corporate Average Fuel Economy Standards. We excluded those rules from in our database because no analysis was available.

[26] In practice, a transfer rule is designed to move resources from the federal government coffers to designated segments of the population. A nontransfer rule is typically aimed at addressing a market failure. According to OMB (2000), "a transfer occurs when wealth or income is redistributed without any direct change in aggregate social welfare."

should receive greater scrutiny by agencies.[27] Second, with a few exceptions, all economically significant rules have an economic analysis.

Three agencies have finalized more than five rules in the database: the Department of Transportation (DOT), the Environmental Protection Agency (EPA), and the Department of Health and Human Services (HHS). We presented the results from those agencies separately but grouped results from the remaining rules together, simply because no other single agency finalized enough rules for summary statistics to be meaningful.[28]

## 3. Results

This section describes the aggregate results of our study of agencies' economic analyses. In general, we find that most economic analyses do not meet the intent of the executive order or the OMB guidelines, and a significant percentage are in clear violation of the order. The analyses are often of low quality, though considerable variation exists. They frequently do not provide the kind of information needed to select the best regulatory alternative or to show that a regulation should be implemented.

We present information on a variety of categories, including benefits, costs, a comparison of benefits and costs, alternatives, and the clarity of presentation for forty-eight rules. We then conclude with a discussion of our analytical conclusions.

*Costs*

Agencies always define some categories of costs and usually quantify some part of those costs. Ninety-five percent of the economic analyses quantified some costs, and

[27] Presidents Reagan and Clinton recognized the importance of careful analysis of economically significant rules when they issued Executive Orders 12291 and 12866, respectively.

[28] The other agencies include the Department of Commerce (DOC), the Department of Energy (DOE), the Department of Labor (DOL), and the Department of Agriculture (USDA).

90 percent of economic analyses monetized some costs.[29] Figure 1 provides an overview of the information agencies presented on monetized costs. The three agencies that finalized the majority of the rules in our database (DOT, EPA, and HHS) monetized costs in over 80 percent of their respective rules. The other agencies monetized costs for only about one-half of the rules. The agencies monetized all stated costs in only 63 percent of the rules.

Those statistics need to be interpreted with care. Some agencies noted, for example, that regulations have costs in addition to direct compliance costs and administrative costs. It would be misleading to suggest lower quality analysis from those agencies simply because they noted some of the indirect costs of regulations but did not attempt to quantify the costs. In fact, the acknowledgement of indirect costs is often an indication of a more thorough analysis on the part of agencies.

Figure 1 shows that agencies presented a best estimate of monetized costs far more often than they presented a range. Over two-thirds of the regulations gave a best estimate of costs, while only one-fourth presented a range of cost estimates. Only 13 percent of the regulations presented both a best estimate and a range of costs.

An improved understanding of the impact of regulatory costs on different groups allows policymakers to address distributional concerns more effectively. We considered whether an economic analysis identified costs to the following groups: producers, nonfederal governments, and the federal government.[30] Almost all economic analyses (94 percent) note that a regulation will impose compliance costs on producers. A third

[29] "Monetize" means that an agency put a dollar value on at least some part of the relevant category, such as costs or benefits.

[30] Although those categories are useful, it is not a simple matter to estimate the ultimate impact of costs on consumers and workers. Indeed the data presented generally do not permit an assessment of the impact of regulations on consumers, workers, and owners of capital.

identify costs to nonfederal governments, while about one-quarter of the regulations identify federal budgetary costs.

Regulations impose costs on those groups in many ways. Agencies routinely note and quantify some of these costs. Over two-thirds of the analyses note that the regulation will have administrative costs.[31] In contrast, the agencies rarely discuss and never quantify the macroeconomic impacts of regulations in their economic analyses.

*Benefits*

Almost all of the regulations (96 percent) had stated benefits. The two rules that do not explicitly address benefits were designed to reduce the costs of existing regulations.[32] Of those rules with benefits, about 70 percent described benefits in quantitative terms, as either a range or a best estimate. Only 17 percent of the rules presented both a best estimate and a range of those quantitative benefits.

Figure 2 provides information on the extent to which agencies monetized any benefits. Agencies converted benefits into dollar equivalents less than one-half of the time. Rarely did agencies give best estimates and ranges for monetized benefits. DOT and EPA are the only agencies that monetize benefits at least one-half of the time. DOT presented monetized benefits for two-thirds of the rules, while HHS only monetized benefits one-third of the time.

Often agencies quantify and monetize only some of the stated benefits. Agencies quantified all stated benefits for 54 percent of the rules and monetized all benefits in only 28 percent of the rules. We were not able to determine the extent to which agencies quantified and monetized the most significant benefits, precisely because agencies did not

[31] The Paperwork Reduction Act requires agencies to estimate the paperwork burden of regulations.
[32] In addition to benefits and costs, agencies include cost savings as a category of regulatory impacts. The difference between cost-savings and benefits is more a matter of semantics than economics, but we

quantify those benefits. Agencies monetized certain categories of benefits more frequently than others. For example, 83 percent of the rules for which agencies identify safety benefits presented monetized estimates of those benefits; 54 percent of the rules for which agencies identify health benefits monetized those benefits, and only 11 percent of rules for which agencies identify benefits from pollution reductions monetized those benefits.[33]

*Comparing Costs and Benefits*

This subsection addresses a variety of issues related to the aggregation of costs and benefits, including net benefit calculations, the reporting of costs and benefits, and the use of discounting.

Figure 3 presents information on the extent to which agencies present information on net benefits, a key indicator of the economic efficiency of a rule. Only 28 percent of the rules presented information on net benefits. Of those, about one-third presented best estimates, and the other two-thirds presented a range. Only two rules presented both a range and best estimate of net benefits.[34] Of the three agencies that promulgated more than five rules, HHS and EPA presented net benefits most often, while DOT never presented net benefits.

For several rules, agencies provided enough information to calculate net benefits but did not do so. Of the rules with monetized costs and benefits, agencies presented net benefits only 56 percent of the time. It is not clear why agencies did not calculate net

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disaggregated cost savings and benefits according to an agency's own categorization. Often a cost saving regulation would make an existing regulation less burdensome.

[33] Most of the monetized benefits from pollution reduction are due to lower morbidity and mortality. We included pollution reduction benefits as a separate category because a substantial fraction of the rules in our database (44 percent) are expected to reduce pollution.

[34] These rules are EPA's "Findings of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Transport of Ozone" and DOE's Energy Conservation Program for Consumer Products; Conservation Standards for Room Air Conditioners."

benefits more often when all that is required is to subtract one estimate from another. One possibility is that agencies do not feel that the cost or benefit estimates are reasonable.[35] Thus, taking the difference between the two might not provide a meaningful estimate of net benefits.

Another possibility is that agencies may be reluctant to present net benefit estimates if those estimates are negative. In our database, thirty-one rules provided estimates of costs and benefits sufficient to calculate net benefits. Of those, about one-half had benefits and costs savings that exceeded the costs.

We divided those thirty-one rules into the twelve where the agency presented net benefits and the nineteen where the agency did not. In the first group, where the agency presented net benefits, three-quarters pass a benefit-cost test. In the second group, only one-third pass the same test. The results provide some support for the view that agencies present net benefits numbers more often when those numbers will support their regulation.

Some differences existed in the extent to which agencies monetized all identified costs and benefits. Agencies monetized all costs for 60 percent of the rules in the database, monetized all benefits for 49 percent of the rules, and monetized all costs and benefits for only 19 percent of the rules. The finding that agencies tend to monetize costs more frequently than benefits is consistent with previous studies.[36]

Sometimes agencies present cost-effectiveness numbers, either in addition to or instead of information on net benefits. The agency calculates cost-effectiveness by

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[35] DOT does not present net benefits if it believes the benefit or cost numbers are not sufficiently robust (DOT 1999).
[36] See Hahn (1999a).

dividing monetized costs by some nonmonetary quantitative measure of benefits.[37] A cost-effectiveness calculation allows the agency to provide information on the effectiveness of a regulation relative to alternative regulatory approaches without assigning a monetary value to quantified benefits.

Figure 4 describes how often agencies presented cost-effectiveness estimates for rules that did not supply information on net benefits. We focus on those rules because cost-effectiveness calculations may be especially useful if benefits are difficult to monetize or agencies are reluctant to monetize benefits. Over one-third of the rules in the database that did not present an estimate of net benefits did present an estimate of cost-effectiveness. That means, however, that just less than two-thirds did not. That is, about half (48 percent) of the forty-eight rules examined here presented no direct measures of net benefits or indirect measures based on cost-effectiveness. Only 6 percent of the forty-eight rules presented both an estimate of net benefits and an estimate of cost-effectiveness.[38]

Figure 4 also reveals a variation in the extent to which different agencies present cost-effectiveness information. EPA presented cost-effectiveness information for about half of the rules for which it did not present net benefit numbers. DOT is the only other agency that provided any information on cost-effectiveness for rules in which net benefit information was not supplied. EPA usually presented cost-effectiveness in terms of cost per ton of pollution abated, while DOT used variations on cost per life saved or "equivalent life saved."[39] By presenting cost-effectiveness numbers, EPA avoided the

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[37] Cost-effectiveness is a more useful measure when there is only one expected benefit from the rule. If the agency expects several benefits, it is not immediately obvious how they should be summed to generate the denominator for the cost-effectiveness calculation.
[38] This estimate could either be a best estimate and/or a range.
[39] In DOT's "Federal Motor Vehicle Safety Standards; Child Restraint Anchorage Systems, Child Restraint Systems," for example, the agency used "equivalent life saved," which included injuries.

task of assigning a dollar value to the pollution abated, and DOT avoided the politically charged task of assigning a value to extending a life.

Often, agencies do not appropriately present the results from cost-effectiveness calculations. When a single regulation reduces several types of pollution, EPA often grouped all pollutants together in its calculation of cost-effectiveness.[40] Depending on the composition of pollutants reduced by the rule, that approach will either exaggerate or understate the costs relative to a net benefit calculation. At other times, EPA calculated the cost-effectiveness of reducing a single pollutant while ignoring the other benefits of the regulation.[41] Such an approach overstates the true cost that should be attributed to each ton abated.

An important issue in comparing benefits and costs is the choice of a discount rate. Future benefits and costs are converted into an equivalent value in present terms by using a discount rate. Almost three-fourths of the analyses used a consistent discount rate for costs and benefits, a generally accepted practice; but about one-fourth did not. Of those using a single discount rate, 86 percent used the rate of 7 percent specified in the OMB guidelines, 14 percent used a discount rate less than 7 percent and only one used a discount rate greater than 7 percent.[42]

*Discussion of Alternatives*

Executive Order 12866 and the OMB guidelines direct agencies to ensure that the regulatory alternative chosen maximizes net benefits.[43] Unfortunately, agencies did not

[40] This aggregation may be more useful when a weighted average is used. For example, DOT provides cost-effectiveness estimates for several of its regulations after combining injuries and deaths by employing a weighting system.
[41] EPA did not include direct hydrocarbon and particulate matter reductions in its calculation of cost-effectiveness of $NO_x$ emission reduction in its rule titled “Emission Standards for Locomotives and Locomotive Engines.”
[42] HHS’s rule, “Medical Devices: CGMP Quality Systems Regulation” used a discount rate of 10 percent.
[43] See Clinton (1993) and OMB (1996).

provide much analysis of alternatives, even when they were able to conduct a quantitative analysis of their preferred option.[44]

Figure 5 shows the extent to which different agencies analyzed alternatives. While agencies discussed alternatives for over two-thirds of the rules, they quantified the costs and benefits of alternatives for only a quarter. The three agencies with more than five rules in our database (DOT, EPA, and HHS) quantified benefits and costs of alternatives between 20 percent and 35 percent of the time. None of the other agencies quantified benefits and costs of alternatives for any of their rules. Only two rules out of forty-eight calculated incremental net benefits of the alternatives.[45] Such incomplete consideration of alternatives makes it difficult to judge whether alternatives would actually be superior to an agency's preferred policy, even using an agency's own assessment.

*Clarity of Presentation*

Clarity afforded by a uniform format helps agencies ensure that they are using consistent assumptions and are presenting consistent results. In fact, less than a quarter of the rules were consistent in even the most fundamental assumptions and results, such as the discount rate chosen, benefits and costs.[46] Less than 60 percent of the rules provided completely consistent benefit numbers in the *Federal Register* and the RIA. While such inconsistencies may reflect new information used in the analysis, no attempt was made to explain them.

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[44] For 35 percent of the rules, agencies presented estimates of benefits and costs for the chosen alternative but failed to present estimates of benefits and costs for other alternatives. If agencies are able to quantify costs and benefits for the chosen alternative, it is highly likely that they would also be able to quantify benefits and costs of relevant alternatives because doing so would not require significant new information or modeling techniques.

[45] Both are EPA rules: "Findings of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Transport of Ozone" and the

[46] Only ten out of forty-eight rules used a consistent dollar year, a consistent discount rate and a consistent estimate of benefits and costs.

Improving the clarity of presentation in RIAs would assist stakeholders in understanding the impact of regulations and help agencies ensure that they are using consistent assumptions and presenting consistent results.

*General Results*

The agencies' economic analyses generally do not provide an adequate basis to make decisions on the net benefits of a proposed rule or its alternatives. Agencies quantified benefits and costs in 71 percent and 85 percent of the rules, respectively; yet, net benefits were quantified for only 29 percent of the rules. Agencies failed to discuss alternatives in 27 percent of the rules and quantified benefits and costs of alternatives in only 31 percent of the rules. The absence of information on net benefit measures suggests strongly that agencies have largely ignored the intent of the executive order and the OMB guidelines.

RIAs are not transparent, in part, because they lack a consistent format for presentation. At a minimum, it would be useful to have an executive summary. An executive summary, which can be used to summarize the key results of an analysis, is found in only about one-half of the RIAs. Only fourteen regulations (29 percent) used an executive summary to present tables of qualitative or quantitative estimates of benefits and/or costs. While other RIAs had such information, it was not as readily available.[47]

RIAs do not have a consistent format, and the presentation of key results is often unclear. Specific economic information is often buried within technical discussion of the health or environmental impacts.[48] It often takes hours to find a specific piece of

[47] Several of the thirty-four regulations without summary tables in the executive summary did present their results in an accessible format.

[48] Often rules describe basic economic concepts such as discounting and nonmarket valuation. While they may be essential for an understanding of the analysis, a lengthy discussion of techniques detracts from and obscures the issues and assumptions that are unique to an individual analysis. Instead, the agencies should simply refer to OMB guidelines that address those more general concerns.

information in an RIA. While the *Federal Register* has often been criticized for poor presentation, it is easier to navigate and presents information in a more uniform, accessible format than RIAs.[49]

## 4. Recommendations and Conclusions

An agency's formal economic analysis of a regulation, such as that contained in an RIA, should be viewed as the starting point for serious policy analysis rather than an end point. We believe the government should provide its assessment of the benefits and costs of proposed regulations in a complete and transparent manner. The majority of the economic analyses we reviewed did not do so and thus failed to adhere to the OMB guidelines or the executive order.

Even if benefits and costs of a proposed regulation are presented in a clear, succinct fashion, a deeper issue that needs to be addressed is related to quality. While our worksheet did not directly measure the quality of the underlying analysis because doing so would require knowledge of specific technical issues, we have reason to be very concerned. First, as noted above, many key pieces of information were simply unavailable and, in some cases, were inconsistent within an RIA. Second, many RIAs did not present information in a clear manner. Third, case studies by scholars suggest that some economic analyses are of high analytical quality, but many suffer deep shortcomings.[50] It is clear the quality issue cannot simply be handled by enforcing guidelines, though that could certainly make the results more transparent.

[49] See Hahn (1999b).
[50] See, for example, Hahn (1996), Morgenstern (1997), and Lutter (1999).

A complete discussion of options for improving regulatory analysis and the regulatory process is beyond the scope of this paper.[51] However, there are a variety of recommendations that flow naturally from this analysis. They include:

- requiring an agency to calculate net benefits when it can estimate benefits and costs; and asking that agency to note the limitations of those estimates;
- requiring an agency to present both best estimates and ranges for benefits, costs, and net benefits; or, alternatively, asking an agency to justify why that cannot be done;
- requiring an agency to quantify any benefits or costs that it is unable or unwilling to monetize; or, alternatively, asking that agency to justify why that cannot be done;
- requiring an agency to expand its consideration of alternatives;
- requiring a clear executive summary that summarizes what is known about the likely benefits and costs of the regulation in a clear format;
- requiring RIAs to have a consistent format so that it is easier to obtain information from different RIAs and compare them;
- requiring that an RIA be posted on the Internet so that such analyses are more easily obtained by interested parties; and
- requiring OMB to provide clearer guidance on how cost-effectiveness numbers should be presented and calculated to avoid some of the current problems.

A critical challenge is to get agencies to adhere to such standards. It is fairly clear that President Clinton, working with OMB, has not been successful in implementing such

[51] See, for example, Breyer (1993), Noll (1999), and Pildes and Sunstein (1996).

reforms, probably due to a lack of interest and willingness to spend political capital.[52] We believe that such reforms are likely to be worthwhile, not necessarily because the analysis itself will improve dramatically, but rather because they will at least make the regulatory process more transparent.

Congress could pass a bill that incorporates our suggestions. It could also create an agency outside the executive branch to report on how such guidelines are being implemented and to review regulations. We recognize the lack of political enthusiasm for making the process more transparent. At the same time, the issue could have some bipartisan appeal because it would arguably hold regulators more accountable for their policies.

Making the regulatory process more transparent is likely to have two benefits. First, it will give interested parties greater access to the key part of the regulatory process used to support a decision. Second, it will make it more likely that scholars will engage in independent regulatory analysis that could lead to improvements in both the regulatory process and regulatory outcomes.

[52] While the Clinton administration may deserve some blame, we believe that the problem is also relevant to earlier Republican administrations. The analyses contained in Hahn (1999) and Morgenstern (1997) would suggest that economic analyses of regulations by agencies were not necessarily better during the Bush and Reagan administrations. Indeed, it may be that most presidents would be unwilling to spend the necessary capital to improve the quality of analysis.

Table 1

## Economic Analysis Scorecard[a]

**General Information**

Regulation Name:____________________________________________________________

Agency and Department:________________________________ Date:______________________________

RIN#: ______________________________________________ Status: final interim-final page

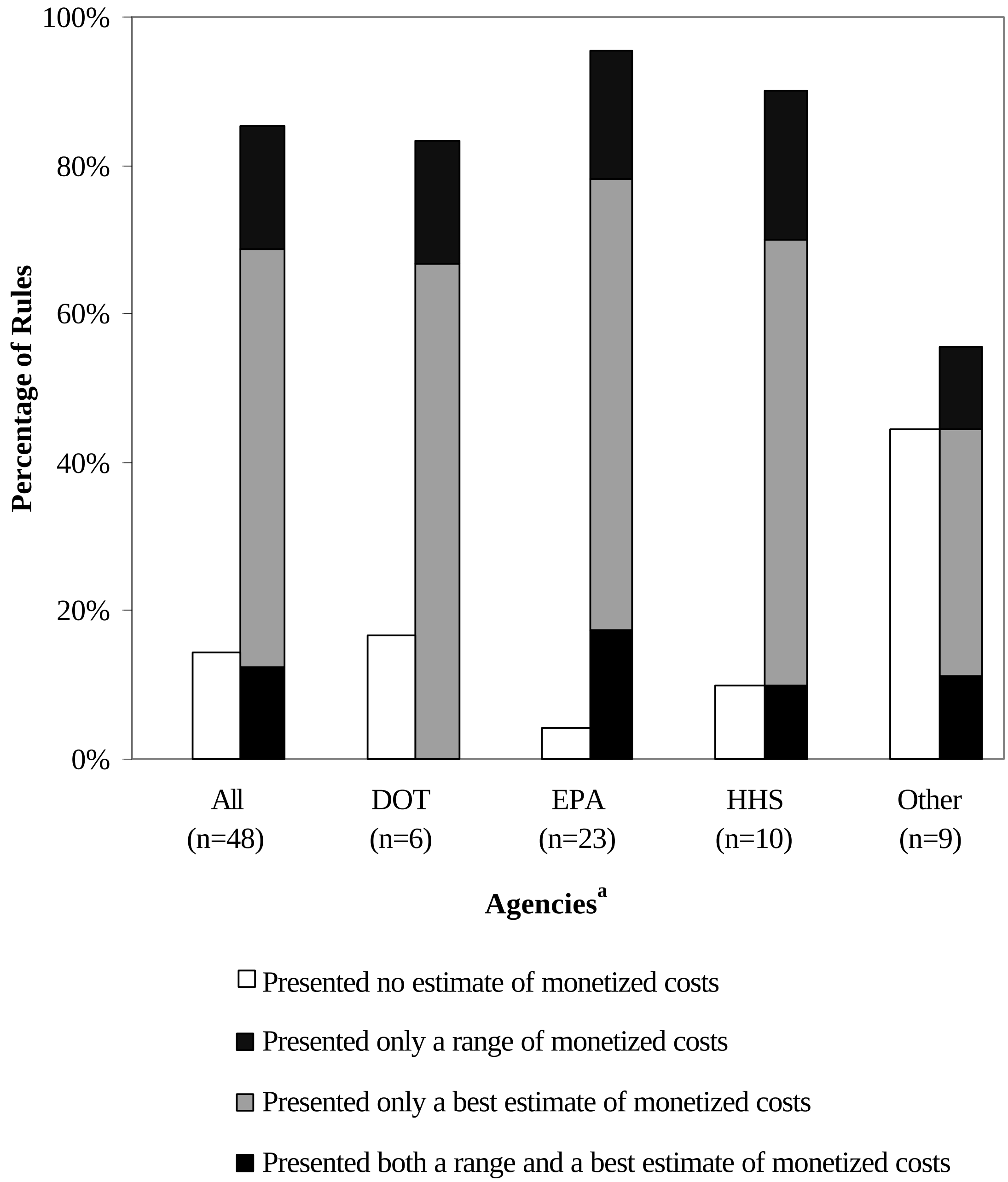
Economically Significant: yes no page Transfer Rule: yes no page

| | Score | page | Notes |
|---|---|---|---|
| 1. Identified Discount Rate | | | |
| 2. Used a Consistent Discount Rate | | | |
| 3. Identified Baseline for Costs | | | |
| 4. Identified Baseline for Benefits | | | |
| 5. Used Consistent Baseline for Costs and Benefits | | | |
| 6. Identified Dollar Year | | | |
| 7. Used Consistent Dollar Year | | | |
| 8. Performed Sensitivity Analysis | | | |
| 9. Gave Executive Summary | | | |
| 10. RIA is Available on the Internet | | | |
| 11. The RIA was Peer-Reviewed | | | |
| 12. Presented Best Estimate of Net Benefits | | | |
| 13. Presented Range of Net Benefits | | | |
| 14. Presented Best Estimate of Cost-Effectiveness | | | |
| 15. Presented Range of Cost-Effectiveness | | | |
| 16. Discussed Alternatives | | | |
| 17. Quantified Costs and Benefits of Alternatives | | | |
| 18. Quantified Incremental Net Benefits of Alternatives | | | |

| **Costs** | **Agency States Exist** | | **Agency Quantified** | | **Agency Monetized** | |
|---|---|---|---|---|---|---|
| | Score | page | Score | page | Score | page |
| 1. Private Sector Producer Compliance Costs | | | | | | |
| 2. Federal Budgetary Costs | | | | | | |
| 3. Local and/or State Government Costs | | | | | | |
| 4. Other Costs | | | | | | |
| 5. Presented Range of Cost Estimates | | | | | | |
| 6. Presented Best Estimate of Costs | | | | | | |
| 7. Presented Consistent Cost Figures Between RIA and *Federal Register* | | | | | | |

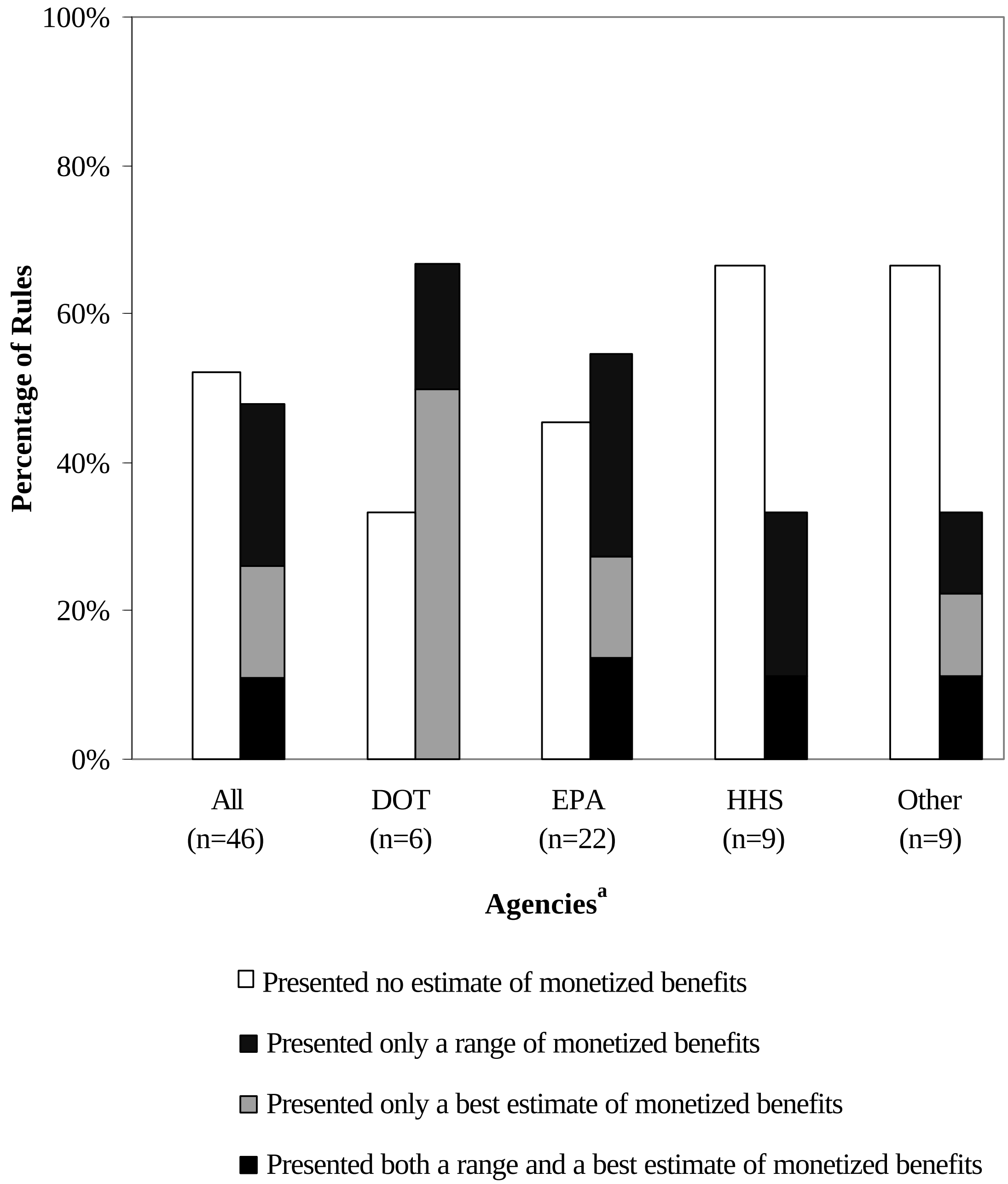
[a] See www.aei.brookings.org for a complete copy of this scorecard, including the factors analyzed for an agency's treatment of cost savings, benefits, uncertainty and bias.

**Figure 1: Agency Analysis of Monetized Costs**



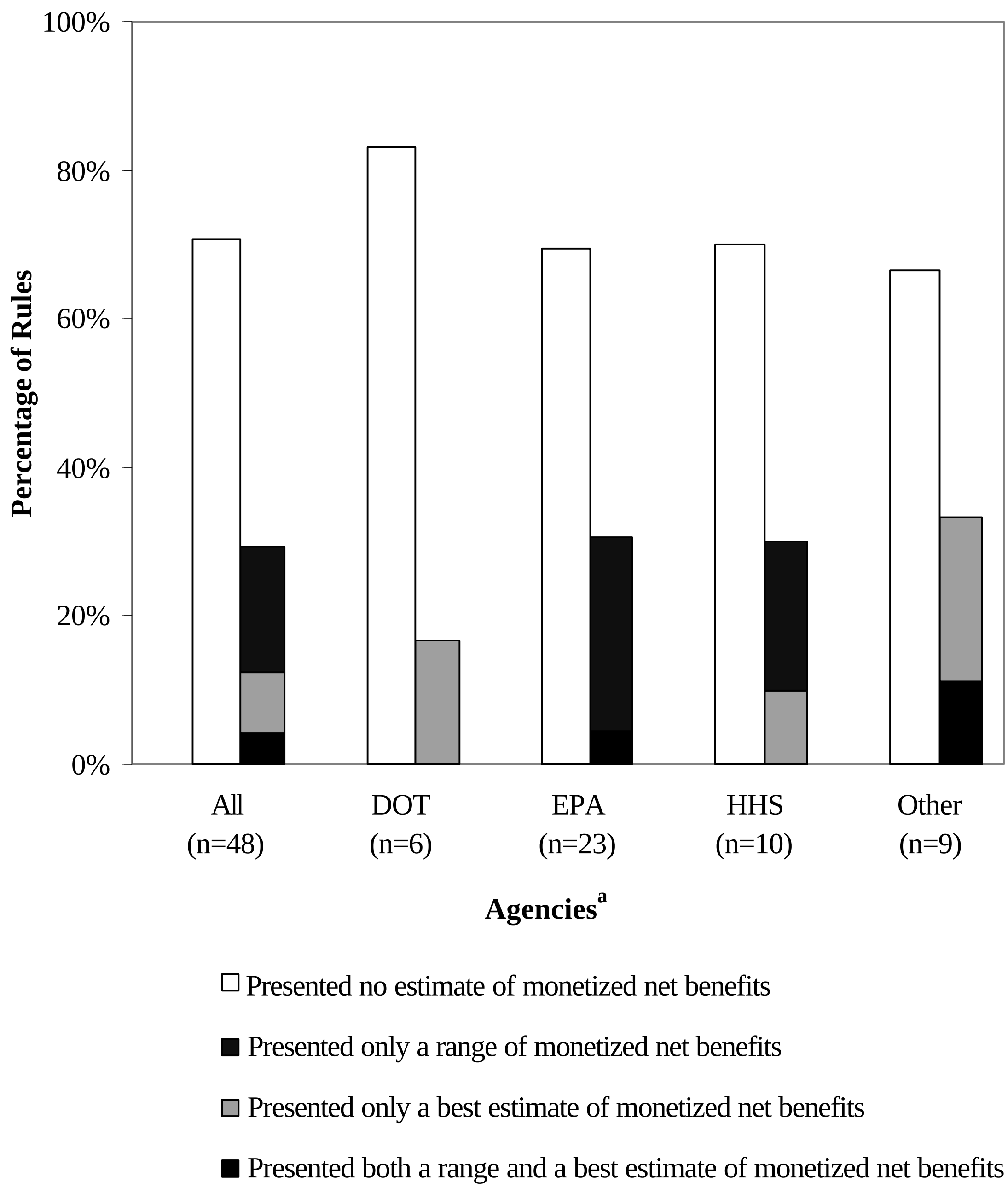

[a] DOT - Department of Transportation. EPA - Environmental Protection Agency. HHS - Health and Human Services. DOC - Department of Commerce. DOE - Department of Energy. DOL - Department of Labor. USDA - Department of Agriculture. The category "Other" includes DOC, DOE, DOL, and USDA.

**Figure 2: Agency Analysis of Monetized Benefits**



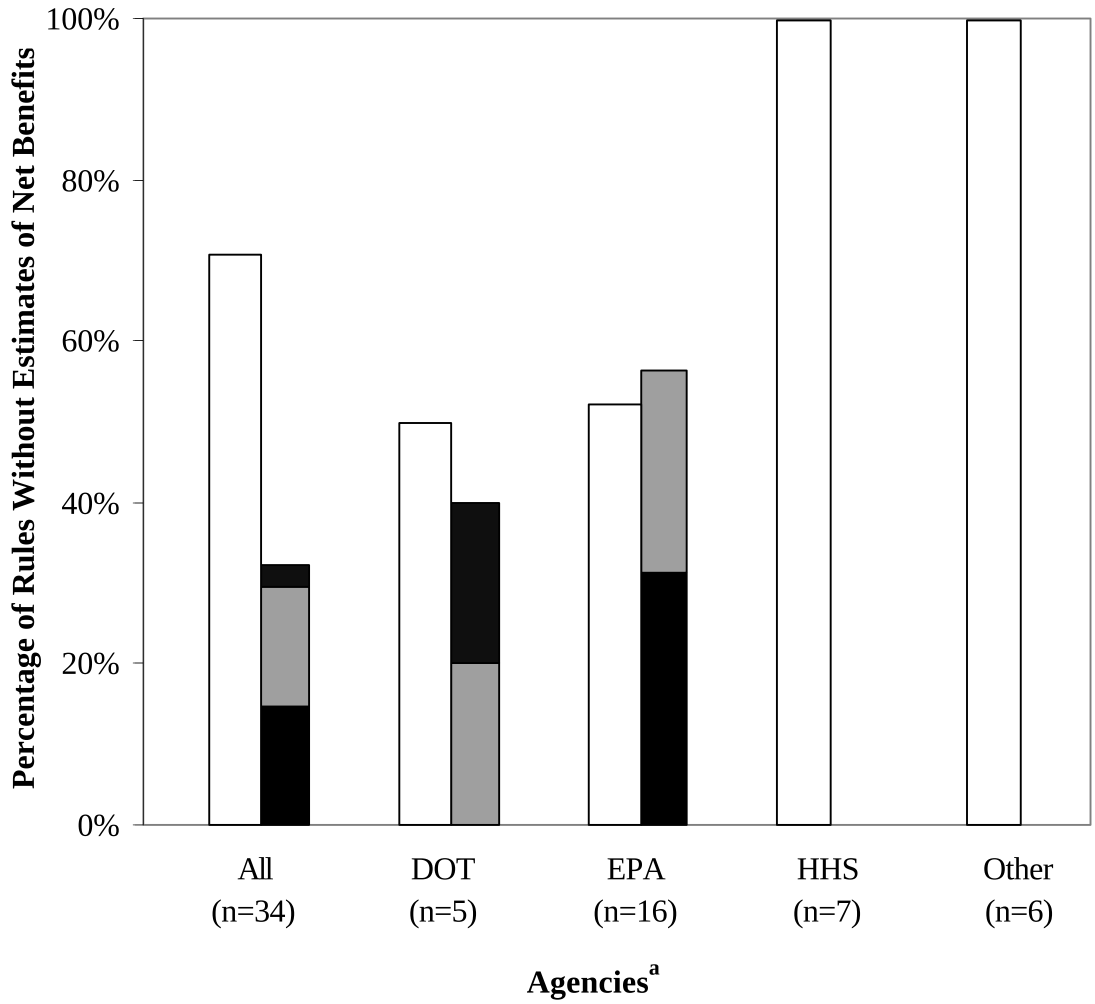

[a] DOT - Department of Transportation. EPA - Environmental Protection Agency. HHS - Health and Human Services. DOC - Department of Commerce. DOE - Department of Energy. DOL - Department of Labor. USDA - Department of Agriculture. The category "Other" includes DOC, DOE, DOL, and USDA. In two rules the agencies do not expect any benefits. These rules are excluded from this analysis.

**Figure 3: Agency Analysis of Monetized Net Benefits**




[a] DOT - Department of Transportation. EPA - Environmental Protection Agency. HHS - Health and Human Services. DOC - Department of Commerce. DOE - Department of Energy. DOL - Department of Labor. USDA - Department of Agriculture. The category "Other" includes DOC, DOE, DOL, and USDA.

**Figure 4: Agency Analysis of Cost-Effectiveness**




☐ Presented no estimate of cost-effectiveness

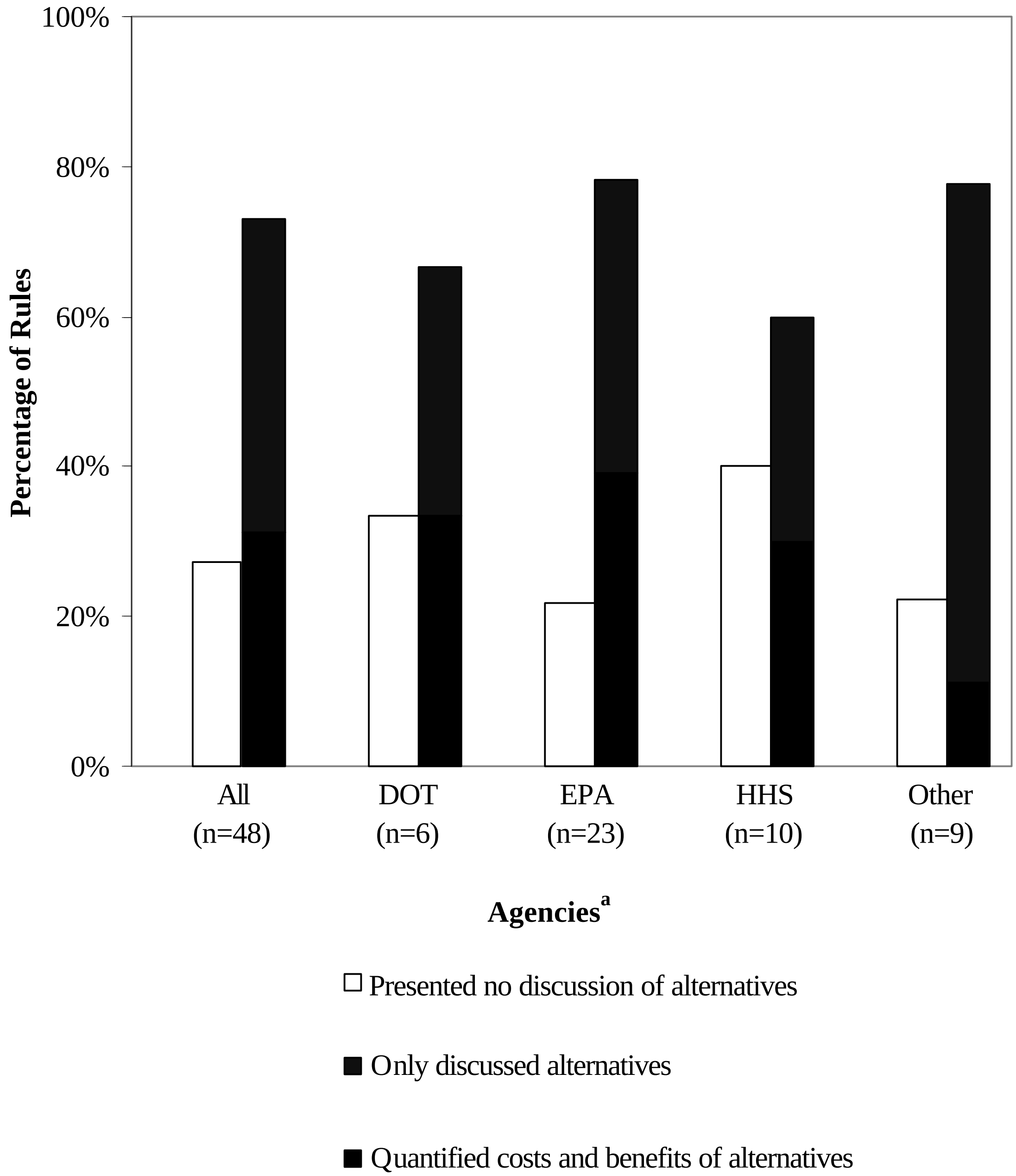
■ Presented only a range of cost-effectiveness

■ Presented only a best estimate of cost-effectiveness

■ Presented both a range and a best estimate of cost-effectiveness

[a] DOT - Department of Transportation. EPA - Environmental Protection Agency. HHS - Health and Human Services. DOC - Department of Commerce. DOE - Department of Energy. DOL - Department of Labor. USDA - Department of Agriculture. The category "Other" includes DOC, DOE, DOL, and USDA.

**Figure 5: Agency Analysis of Alternatives**




[a] DOT - Department of Transportation. EPA - Environmental Protection Agency. HHS - Health and Human Services. DOC - Department of Commerce. DOE - Department of Energy. DOL - Department of Labor. USDA - Department of Agriculture. The category "Other" includes DOC, DOE, DOL, and USDA.

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