Evaluating the Quality and Use of Regulatory Impact Analysis

The Mercatus Center's Regulatory Report Card, 2008–2013

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Abstract

The Mercatus Center at George Mason University initiated its Regulatory Report Card project in 2009 to assess how well executive branch regulatory agencies conduct and use regulatory impact analysis and to identify ways to motivate improvement. Report Card evaluations reveal that agencies often adopt regulations that affect several hundred million Americans and impose hundreds of millions of dollars in costs without knowing whether a given regulation will really solve a significant problem, whether a more effective alternative solution exists, or whether a more targeted solution could achieve the same result at lower cost. Extensive statistical analysis of Report Card scores suggests that institutional reforms are the most promising means of improving the quality and use of regulatory impact analysis.

JEL codes: D61, D73, D78, H11, H83, K23, L51, P16

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1. Introduction

Better analysis is an input into better regulation. Better regulation, in this context, means regulation that solves a significant problem at a reasonable cost. To know whether a regulation solves a significant problem at a reasonable cost, the regulatory agency needs to know whether a significant problem exists, the root cause of the problem, alternative solutions that address the root cause, the effectiveness of each alternative in solving the problem, the benefits to society of each alternative, and the costs to society of each alternative. This is the information that a complete regulatory impact analysis (RIA) provides.

Several regulatory reform proposals in the United States aim explicitly to improve the quality and use of RIAs.[1] Other proposals implicitly assume that high-quality analysis is available to inform decisions about regulations.[2]

Since 1997, scholars at the Mercatus Center at George Mason University have submitted public interest comments to federal agencies on individual regulations, often suggesting how agency analysis could be improved.[3] But are deficiencies in agency analysis isolated anecdotal examples or evidence of systematic problems with the federal regulatory system that could be remedied by reform of the regulatory process? To answer this question, the Mercatus Center

[1] For examples, see Dudley (2015), House Judiciary Committee (2013), President's Council on Jobs and Competitiveness (2011), Tozzi (2011, 68), Katzen (2011, 109), Fraas and Lutter (2011a), Shapiro and Morrall (2013), Ellig and Williams (2014a), and Hahn and Sunstein (2002).

[2] For example, the Regulations from the Executive in Need of Scrutiny Act of 2015, if signed into law, would require congressional approval before any regulation with an annual economic impact of $100 million or more could take effect.

[3] All Mercatus Center public interest comments since 1997 are available at http://mercatus.org/all-publications/public-interest-comments.

initiated the Regulatory Report Card project in 2009. Trained researchers evaluated the quality and use of agency RIAs and related analyses contained in notices of proposed rulemaking (NPRMs) for the 130 economically significant prescriptive regulations proposed by executive branch agencies and reviewed by the Office of Information and Regulatory Affairs (OIRA), within the Office of Management and Budget (OMB), during the years 2008–2013. Economically significant regulations are those that have costs or other economic effects that are estimated to exceed $100 million annually or that meet other criteria specified in Executive Order (EO) 12866, which governs regulatory analysis and review for executive branch agencies. Prescriptive regulations mandate or prohibit activities. The evaluation criteria are based on the principles enunciated in EO 12866 and in OMB's guidance to regulatory agencies contained in *Circular A-4* (OMB 2003).

Regulatory Report Card evaluations show that RIAs often lack thorough analysis of key issues they are supposed to cover. This means that regulatory agencies often adopt regulations that affect several hundred million people and impose hundreds of millions of dollars in costs without knowing whether a given regulation will really solve a significant problem, whether a more effective alternative solution exists, or whether a more targeted solution could achieve the same result at lower cost. These findings are consistent with those of prior scholarly studies that examine the quality and use of RIAs (Belcore and Ellig 2008; Fraas 1991; Fraas and Lutter 2011b; Hahn et al. 2000; Hahn and Dudley 2007; Hahn and Litan 2005; Hahn and Tetlock 2008; Harrington, Heinzerling, and Morgenstern 2009; McGarity 1991; Morgenstern 1997; Shapiro and Morrall 2012).

The quality and use of RIAs are both highly variable. Understanding the reasons for the variability is the first step toward identifying the changes most likely to produce higher-quality

analysis. For example, if the quality or use of analysis varies with OIRA's influence in a particular presidential administration, increasing OIRA's influence or resources could increase the quality or use of analysis. If political considerations lead to lower-quality analysis regardless of the presidential administration, regulatory process reforms that would create external checks on the quality and use of analysis could be more effective. If the party controlling the White House is the primary factor affecting the quality and use of regulatory analysis, the ballot box is likely the most effective means of improving the quality and use of analysis. If the quality or use of analysis varies with congressionally imposed constraints on agency authority, Congress could motivate greater quality and use of analysis by clarifying that it expects agencies to conduct and use high-quality analysis. If the quality and use of analysis vary greatly across agencies, specific authorizing statutes may be the most effective vehicle to promote improvement. If appreciable differences across agencies are rare, broad process reform is likely the more effective mechanism. If none of these factors matter, improvements in analytical methods are likely the most effective means of improving the quality and use of RIAs.

To help find the most effective means of encouraging better quality and greater use of RIAs, this paper includes econometric analysis to identify the principal political, institutional, and other factors correlated with the quality and use of analysis.

2. Regulatory Report Card Methodology

The evaluation criteria used in the Regulatory Report Card project flow directly from the principal requirements for regulatory impact analysis found in EO 12866 and OMB *Circular A-4*, which provides OMB's guidance to agencies on producing RIAs.

2.1. Regulatory Impact Analysis Requirements

For more than three decades, presidents have issued executive orders requiring executive branch agencies to conduct regulatory impact analysis for each significant regulation. In 1993, President Clinton's EO 12866 laid out the fundamental requirements that have governed regulatory analysis and review ever since. OIRA reviews all regulations considered significant. Analytical requirements are especially rigorous for economically significant regulations, which are defined as regulations that have a material adverse effect on the economy, that have an annual effect on the economy of $100 million or more, or that meet certain other requirements specified in the executive order (EO 12866, § 3(f)(1)).

Major elements of a thorough RIA include these actions:

1) Assess the nature and significance of the problem the agency is trying to solve, so the agency knows whether there is a problem that could be solved through regulation and, if so, the agency can tailor a solution that will effectively solve the problem (EO 12866, § 1(b)(1)).
2) Identify a wide variety of alternative solutions (EO 12866, § 1(b)(2), § 1(b)(3), § 1(b)(8)).
3) Define the benefits that the agency seeks to achieve in terms of ultimate outcomes that affect citizens' quality of life, and assess each alternative's ability to achieve those outcomes (EO 12866, § 6(a)(3)(B)(ii), § 6(a)(3)(C)(i), and § 6(a)(3)(C)(iii)).
4) Identify the opportunity cost to society of each alternative (EO 12866, § 6(a)(3)(B)(ii), § 6(a)(3)(C)(ii), and § 6(a)(3)(C)(iii)).

Agencies are required to design regulations "in the most cost-effective manner to achieve the regulatory objective" (EO 12866, § 1(b)(5)) and to "propose or adopt a regulation only upon a reasoned determination that the benefits of the regulation justify its costs" (EO 12866, § 1(b)(6)).

Every president since Jimmy Carter has also required federal agencies to make provisions for retrospective analysis of the effects of regulations after they are implemented. Carter's EO 12044 (§ 2(d)(8)) required an agency head to determine, before approving a new significant regulation, that the agency had a plan to evaluate the regulation's results. Subsequent executive orders dropped this requirement but established mechanisms for administration-wide retrospective review initiatives. OMB's (2014, 7) most recent report on the benefits and costs of regulations notes that "rules should be written and designed, in advance, so as to facilitate retrospective analysis of their effects, including consideration of the data that will be needed for future evaluation of the rule's ex post costs and benefits."

When an agency adopts a regulation in the absence of the information that a good RIA would provide, it is flying blind. Consider some examples of what happens when agencies lack adequate knowledge of whether the provisions of a proposed regulation would solve a significant problem at a reasonable cost:

1) In 2015, the Food and Drug Administration (FDA) finalized a regulation requiring firms that produce, process, pack, or handle animal food to have processes and procedures in place to ensure that animal food is as safe as human food (FDA 2015a). The rule applies both to pet food and to livestock feed. The vast majority of the problem—and the primary problem affecting human health—was transmission of salmonella from pets and their food to humans. Most laboratory-confirmed salmonella cases between 2007 and 2013 that did not involve human food involved transmission from pets and household livestock; 8 percent involved transmission from pet food. The final RIA estimated the regulation would generate $10.1 million to $138.8 million in benefits annually by protecting humans and pets from contaminated food. The FDA presented no empirical

evidence of benefits for livestock, relying instead on a survey of experts who offered their opinions on how effective the rule would be in preventing contamination of livestock feed (FDA 2015b, 31–51). To solve the problem that was actually documented by empirical evidence, the FDA could have applied the regulation only to pet food, not all animal feed, a change that would have substantially reduced costs because it would have covered a much smaller number of firms and facilities. Or it could have considered alternatives, such as improved consumer education to encourage people to wash their hands after handling animals and their food. The agency missed these alternatives because of incomplete analysis. The preliminary RIA, conducted while the FDA was developing the regulation, did not even attempt to estimate the benefits or identify their source (Ellig and Williams 2014b).

2) In 2011, the Department of Justice (DOJ) proposed national standards intended to reduce the incidence of rape in prisons (DOJ 2011). The RIA accompanying the regulation demonstrated that prison rape is a serious problem that generates substantial costs in terms of both money and human dignity. Unfortunately, the DOJ did not conduct an evidence-based analysis that traced the problem to its root cause or that demonstrated how the proposed regulation would solve a substantial portion of the problem. The DOJ relied heavily on the best practices recommended by an advisory commission. The advisory commission's report consisted of anecdotes about horrible things that happened to prisoners, followed by assertions that various best practices would have prevented those anecdotal events from occurring. It contained little or no evidence that the recommended practices have, in fact, reduced the incidence of rape in prisons in which they have been implemented. Thus, the agency's RIA documented a horrific problem and

even placed a substantial monetary value on it, but the RIA provided little assurance that DOJ's regulation would actually solve the problem. As a result, policymakers may believe they have solved a problem that has not actually been solved, and potential victims may have been handed false hope that their plight would improve.

3) In November 2015, the US Department of Agriculture (USDA) finalized a regulation requiring USDA inspection of catfish processing plants (USDA 2015). A risk assessment conducted during development of the regulation noted that there was only one salmonella outbreak that might have been due to catfish in the previous 20 years. Nevertheless, the RIA accompanying the regulation estimated that the regulation would prevent more salmonella illnesses than have ever been linked to catfish, because it assumed that the incidence of salmonella in catfish is the same as in chicken (Williams and Abdukadirov 2011). The regulation was mandated by an amendment tacked onto the 2008 Farm Bill without any committee hearing, floor debate, or scientific finding. In May 2016, the Senate voted to disapprove the regulation under the Congressional Review Act, and the joint resolution of disapproval awaits action in the House of Representatives. In deciding whether to disapprove this regulation, lawmakers could have benefitted from an honest analysis that accurately assessed the risks of salmonella from catfish based on consumers' actual experience with catfish.

It should be clear from these examples that the purpose of a good RIA is not just to count compliance costs or determine whether the monetized benefits of a regulation exceed the monetized costs. Before any calculations, the fundamental purpose of an RIA is to identify, and verify with evidence, the cause-and-effect chains that explain the source of the problem to be solved, explain how alternative solutions can create social benefits by solving the problem, and

explain how each alternative creates social costs. Any quantitative estimates that are not grounded in an evidence-based assessment of cause and effect are meaningless. For this reason, a good RIA involves much more than some people imagine when they refer to an RIA as a benefit-cost analysis.

2.2. Outline of the Regulatory Report Card Project

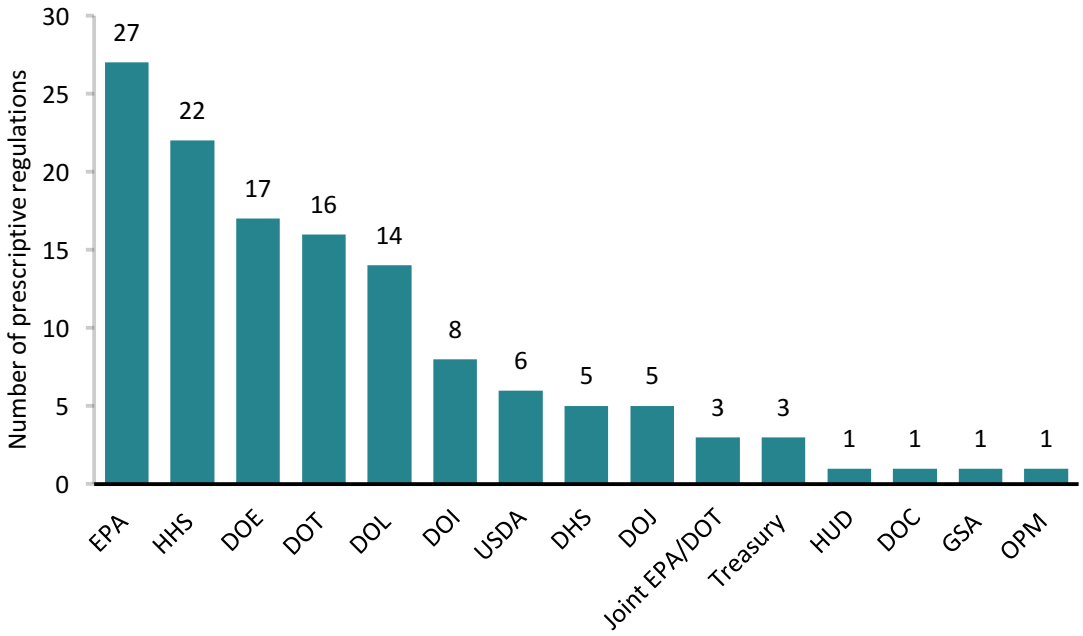
Regulations evaluated. In the Regulatory Report Card project, a research team from the Mercatus Center at George Mason University assessed the quality and use of regulatory impact analysis accompanying every economically significant prescriptive regulation that was proposed by executive branch regulatory agencies and that cleared OIRA review between 2008 and 2013—a total of 130 regulations.

A prescriptive regulation contains mandates, prohibitions, or other restrictions on citizens' activity. The other major type of regulation is budget regulations, which implement federal spending or revenue collection programs (Posner 2003). The Regulatory Report Card project evaluated 40 budget regulations in 2008 and 2009. Evaluation of budget regulations was discontinued after it became clear that RIAs for most budget regulations were quite inferior to the RIAs for most prescriptive regulations. For this reason, most of the comparisons in this paper focus on the 130 prescriptive regulations assessed by the Regulatory Report Card project.

Ten different agencies produced these 130 regulations. Figure 1 shows the agencies and the number of regulations each agency issued. Three sets of overlapping regulations dealing with corporate average fuel economy standards and greenhouse gas emission standards for automobiles emerged as a result of close collaboration between the Department of

Transportation (DOT) and the Environmental Protection Agency (EPA); these are broken out separately in the figure.[4]

Figure 1. Agencies Proposing the 130 Prescriptive Regulations Evaluated in the Regulatory Report Card



Note: EPA = Environmental Protection Agency; HHS = Department of Health and Human Services; DOE = Department of Energy; DOT = Department of Transportation; DOL = Department of Labor; DOI = Department of the Interior; USDA = US Department of Agriculture; DHS = Department of Homeland Security; DOJ = Department of Justice; Treasury = Department of the Treasury; HUD = Department of Housing and Urban Development; DOC = Department of Commerce; GSA = General Services Administration; OPM = Office of Personnel Management.

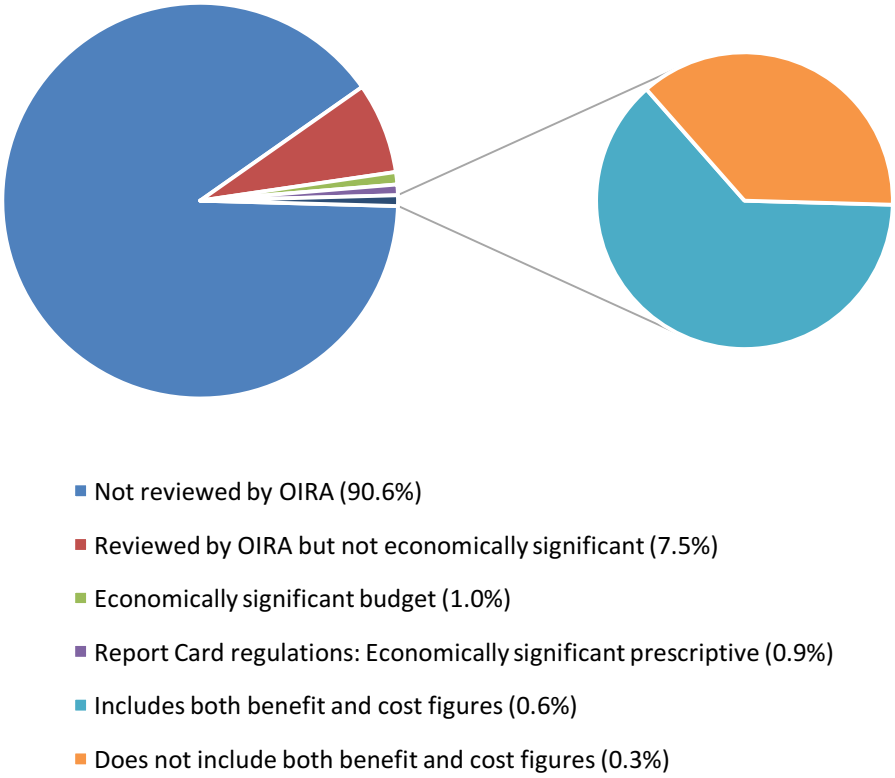
Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

The prescriptive regulations evaluated in the Report Card are likely the regulations with the largest economic effects. However, they are a small percentage of the 14,795 regulations proposed in the 2008–2013 period. Figure 2 shows that 90.6 percent of regulations proposed then were not reviewed by OIRA. Another 7.5 percent of the regulations were reviewed by OIRA but

[4] OMB's (2014, 11) annual report on the benefits and costs of regulations classifies these regulations separately, for the same reasons.

were not economically significant. The 130 economically significant prescriptive regulations evaluated for the Report Card project account for slightly less than 1 percent of the regulations proposed during 2008–2013. The Report Card evaluators found that 82 regulations—just 0.6 percent of all regulations issued during this period—were accompanied by an RIA that contained monetary figures for both benefits and costs. Furthermore, the results in this paper demonstrate that many of those estimates are suspect or seriously incomplete.

Figure 2. Few Proposed Regulations Are Accompanied by a Regulatory Impact Analysis



Note: OIRA = Office of Information and Regulatory Affairs.

Source: Author's calculations, based on data compiled from the *Federal Register*, reginfo.gov, www.mercatus.org/reportcards, and RIAs for individual regulations.

The Report Card project evaluated the analysis accompanying the proposed regulations, rather than the final regulations, for several reasons. First, we wanted to assess the version of the analysis that was most likely to affect agency decisions. The analysis accompanying a proposed regulation is more likely to affect decisions, because it is (usually) conducted while the agency is developing the regulation. A final RIA is no longer open to change and is more likely to simply justify whatever decisions the agency has made. Second, the analysis accompanying a proposed regulation is the agency's primary means of informing the public about the likely effects of a regulation and any alternatives when the agency solicits comments from the public. To give the public a meaningful opportunity to comment on the merits of proposed regulations, agencies should fully disclose the likely effects of regulations and alternatives when the agency asks for public input, not afterward. Finally, evaluating the analysis that accompanied a proposed regulation created the opportunity to submit comments on the record suggesting how the analysis could be improved. Mercatus scholars submitted numerous such comments during the Report Card project.[5]

Evaluation protocol. The scoring process used criteria derived from EO 12866 and OMB (2003) guidance to regulatory agencies. The original Report Card scoring system consisted of 12 criteria grouped into three categories: openness, analysis, and use. The openness criteria attempt to measure the transparency of the analysis. The analysis criteria consist of the four fundamental topics that any RIA should cover. Two of the use criteria address the extent to which an agency explained how it used an analysis in making decisions about a regulation, and two others address the extent to which an agency made provisions for retrospective analysis of the regulation in the future.

[5] These comments are available at www.mercatus.org/reportcards.

Table 1 lists the criteria. Appendix A lists the evaluation questions considered under each criterion. Ellig and McLaughlin (2012) provide a crosswalk chart that shows how the evaluation criteria correspond to items in OMB's RIA checklist (OMB 2010).

Table 1. Regulatory Impact Analysis Assessment Criteria

Type	Description
Openness	1. *Accessibility:* How easily were the RIA, the proposed rule, and any supplementary materials found online? 2. *Data documentation:* How verifiable are the data used in the analysis? 3. *Model documentation:* How verifiable are the models and assumptions used in the analysis? 4. *Clarity:* Was the analysis comprehensible to an informed layperson?
Analysis	5. *Outcomes:* How well does the analysis identify the desired benefits or other outcomes and demonstrate that the regulation will achieve them? 6. *Systemic problem:* How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve? 7. *Alternatives:* How well does the analysis assess the effectiveness of alternative approaches? 8. *Benefit-cost analysis:* How well does the analysis assess costs and benefits?
Use	9. *Use of analysis:* How well does the NPRM or RIA explain how the agency used any part of the analysis in any decisions? 10. *Cognizance of net benefits:* How well did the agency demonstrate that it understood the net benefits (benefits minus costs) of the alternatives it considered, explain the role that net benefits played in its decisions, and explain any factors other than net benefits that affected its decisions? 11. *Measures and goals:* Does the proposed rule establish measures and goals that can be used to track the regulation's results in the future? 12. *Retrospective data:* Did the agency indicate what data it will use to assess the regulation's performance in the future and establish provisions for doing so?

Note: RIA = regulatory impact analysis; NPRM = notice of proposed rulemaking.

Source: Jerry Ellig and Patrick A. McLaughlin, "The Quality and Use of Regulatory Analysis in 2008," *Risk Analysis* 32 (5): 855–80.

After 2012, in response to feedback received from readers and presentation audiences, the scoring system was streamlined and the evaluation questions for quality of analysis were rearranged to group them into more intuitive categories. The post-2012 scoring system includes four criteria that assess the quality of analysis:

1) *Systemic problem.* How well does the analysis demonstrate the existence of a market failure, government failure, or other systemic problem that the regulation is supposed to solve, and how well does the analysis trace the problem to its root cause?[6]
2) *Alternatives.* To what extent does the analysis consider a broad range of alternatives and assess their likely results?
3) *Benefits (or other outcomes).* How well does the analysis identify the benefits or other desired outcomes, and how well does the analysis demonstrate that the regulation will achieve them?
4) *Costs.* How well does the analysis assess the costs of the regulation?

The new system rearranges some of the evaluation questions in the "Analysis" section of appendix A under these four revised criteria. Because the post-2012 system does not add any new evaluation questions, the 2008–2012 scores can easily be converted to match the new scoring system. A spreadsheet containing all 2008–2012 scores under the pre-2012 scoring system, as well as the 2008–2013 scores under the new scoring system, can be downloaded at http://mercatus.org/reportcards.

The post-2012 system retains the two criteria that assess how well an agency explained its use of analysis in its decisions. In the pre-2012 system, these were numbered criteria 9 and 10; in the post-2012 system, they are numbered 5 and 6.

Criteria 5 and 6 are based on claims that an agency made about its use of RIAs. The Report Card evaluators could not observe the extent to which information in an RIA actually influenced agency decisions. One might expect that agency claims about using an RIA would result in numerous false positives, as agencies might claim to use RIAs simply to make it easier

[6] For a succinct explanation of the concepts of market failure and government failure, see Dudley and Brito (2012).

to sell a regulation to OIRA or the public. However, the data presented in this paper demonstrate that, in the majority of cases, federal agencies do not claim to have used the RIA at all. Therefore, it does not appear that false positives distort the data. There may well be a countervailing tendency for false negatives, because an agency's RIA can be challenged in court if the agency relies on it to justify decisions about a regulation (Cecot and Viscusi 2015, 591).

The post-2012 system eliminates the openness criteria (1–4 in table 1) and retrospective analysis criteria (11 and 12 in table 1). Therefore, scores for these criteria are available only for regulations proposed in 2008–2012. This paper presents and discusses scores for the full 2008–2013 dataset using the six criteria in the post-2012 scoring system. It also presents and discusses scores for openness and retrospective analysis for the regulations proposed in 2008–2012.

For the Report Card project, two trained evaluators read the NPRM and RIA for each regulation. For each criterion, the evaluators assigned a score ranging from 0 (no useful content) to 5 (comprehensive analysis with potential best practices). The research team used the guidelines in table 2 for scoring. Because the analysis criteria involve so many discrete aspects of regulatory analysis, we developed a series of subquestions (see appendix A) for each of the four analysis criteria and awarded a 0–5 score for each subquestion. These scores were then averaged to calculate the score for each individual criterion. The scorers compiled notes explaining the reasons for each score; the notes on each regulation are available at www.mercatus.org /reportcards.

As a qualitative evaluation using Likert scale scoring, the Report Card represents an approach midway between checklist scoring systems and detailed case studies of individual regulations. Unlike a checklist system, the Report Card assesses the quality of analysis on each criterion, not just whether some content was present in a given RIA. Unlike a case study, the

Report Card does not assess the quality or reliability of the underlying science that an agency used in its analysis. The evaluation method is explained more fully in Ellig and McLaughlin (2012). Interrater reliability tests indicate that the training method for evaluators produces consistent evaluations across multiple scorers (Ellig and McLaughlin 2012; Ellig, McLaughlin, and Morrall 2013).[7] As an additional cross-check, the econometric analysis in section 5 of this paper was repeated, including a dummy variable that indicated whether the regulation was evaluated by two senior scholars or one senior scholar and a research assistant. The dummy variable was never close to statistically significant, suggesting that the identity of the scorers has little appreciable influence on the scores.[8]

Table 2. What Do the Scores Mean?

5	Complete analysis of all or almost all aspects, with one or more best practices
4	Reasonably thorough analysis of most aspects and/or shows at least one best practice
3	Reasonably thorough analysis of some aspects
2	Some relevant discussion with some documentation of analysis
1	Perfunctory statement with little explanation or documentation
0	Little or no relevant content

[7] Scores are thus intersubjective, which refers to subjective interpretations that different individuals can share because they have commonly understood meanings. Social scientists most commonly use the term to denote economic agents' ability to understand the interpretations and meanings of other economic agents (Schütz 1953, 7–8) or the social scientist's ability to understand the interpretations and meanings of the economic agents who are the subject of study (Schütz 1953, 34; Lavoie 1990, 172–77). I think it applies equally well here, when colleagues share similar subjective understandings of what constitutes better and worse analyses.

[8] An anonymous reviewer suggested that the regressions should include a dummy variable for each evaluator. This was impractical to implement because the project used more than 20 different evaluators in rotating pairs.

The purpose of the Report Card is to assess the completeness of an agency's analysis and the extent to which the agency explained how it used its analysis in its decisions. The scores do not indicate whether the evaluators think the regulation is efficient, equitable, or otherwise a good idea. *Thus, the Report Card evaluates the quality of the analysis and the agency's explanation of how the analysis was used, not the quality of the regulations themselves.*

3. Summary of Report Card Results

This section provides a descriptive overview of the Report Card results. The reader should keep in mind that not all numerical differences described in this section may be statistically significant, after controlling for other factors that may affect the scores. That issue is considered in the econometric analysis in section 5.

3.1. Average Scores Are Relatively Low

Table 3 shows summary statistics for the prescriptive regulations evaluated in the Report Card. The average scores are relatively low compared with the maximum possible number of points an analysis could earn. The average score for quality of analysis is just 10.7 out of 20 possible points—barely 50 percent. The highest score is 18—or 90 percent (equivalent to an A-). Only one regulation earned this score.

Figure 3 compares the scores on the four criteria that constitute the quality of analysis score; three of the four have average scores below 3 points. Of particular concern is the score for analysis of the systemic problem, which averages slightly more than 2 out of 5 possible points. It is questionable whether, without a thorough analysis of the problem and its root cause, an agency could really identify the most effective or efficient alternative solution(s). It is also questionable

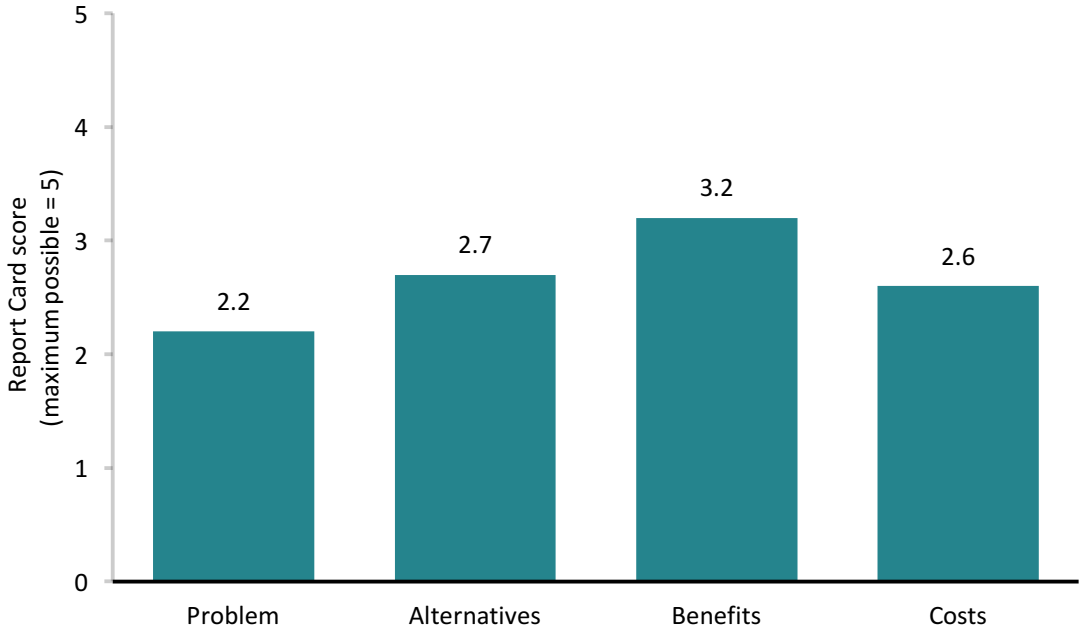
whether the regulation would really deliver the promised benefits if the analysis has not identified the true cause of the problem. Yet analysis of the problem is the least thorough element of the RIA for many regulations.

Table 3. Summary Statistics for Report Card Score Data for Prescriptive Regulations

Prescriptive regulations	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	130	10.7	2.8	2	18	20
Systemic problem	130	2.2	1.0	0	4	5
Alternatives	130	2.7	1.2	0	5	5
Benefits or other outcomes	130	3.2	0.8	1	5	5
Costs	130	2.6	0.9	1	5	5
Any use of analysis	130	2.3	1.4	0	5	5
Cognizance of net benefits	130	2.4	1.5	0	5	5
Retrospective analysis	108	2.8	1.7	0	10	10
Openness	108	12.8	2.3	6	18	20

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 3. Average Scores for Major Elements of Regulatory Impact Analysis



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Average scores for the two criteria assessing how well an agency explained its use of analysis are even lower. *Any use claimed* and *Cognizance of net benefits* both earned an average of less than half the possible points (2.3 and 2.4 points, respectively). The criterion with the worst average is *Retrospective review*, with 2.8 out of 10 possible points, or 28 percent. *Openness*, in contrast, fared the best, averaging 12.8 out of 20 possible points, or 64 percent. This likely occurs because regulations almost always score high on the first openness criterion, which assesses how easily the NPRM, RIA, and related documents could be found on the Internet.

Comparing the maximum score achieved with the maximum possible score listed in table 3 demonstrates that, for almost every criterion, at least one regulation usually received the maximum possible score—or close to it. But few regulations score high across all criteria. Appendix B provides a more detailed view, listing the scores for every regulation evaluated in the Report Card project. (Budget regulations are in italics.)

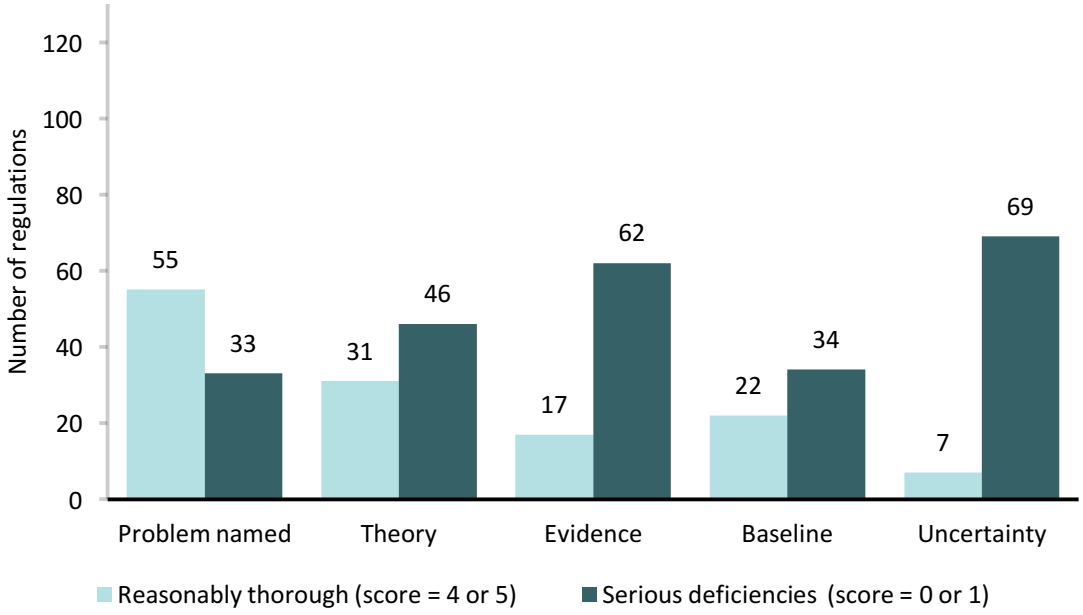
3.2. Significant Deficiencies Are Common

In general, analyses are more likely to perform reasonably well on criteria that are relatively easy to satisfy, and they are more likely to have serious deficiencies on criteria that require more effort. Unfortunately, the significant deficiencies often occur on elements of an analysis that are crucial for informed decisions.

The following figures demonstrate both of these points. For each critical element of regulatory analysis, figure 4 shows the number of prescriptive regulations with a reasonably thorough analysis (score = 4 or 5) or an analysis with little or no relevant content or just perfunctory statements (score = 0 or 1).

Systemic problem. Fifty-five regulations (42 percent) have a reasonably thorough explanation of a market failure, government failure, or other systemic problem that the regulation might solve. Thirty-one regulations (24 percent) have a coherent theory identifying the nature of the problem and outlining its cause. Just 17 regulations (13 percent) have reasonably thorough evidence that the theory is correct. Numbers are similarly low for analysis of the baseline and assessment of uncertainty about the existence or size of the problem.

Figure 4. Number of Regulations with Reasonably Thorough or Seriously Deficient Analysis of the Systemic Problem



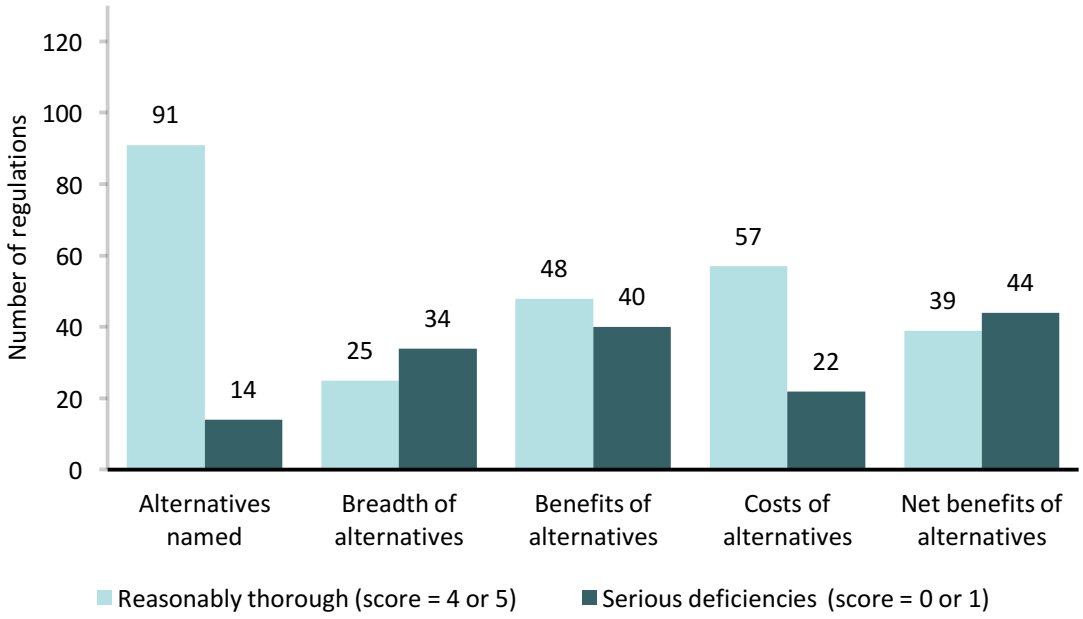
Note: Total regulations studied = 130.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Meanwhile, 62 regulations (48 percent) have no significant evidence demonstrating the existence, size, or cause of the problem to be solved. Sixty-nine regulations (53 percent) have little or no assessment of uncertainties about the existence or size of the problem addressed.

Alternatives. Most of the regulations (70 percent) have some alternatives outlined in either the RIA or the NPRM. But only 25 regulations (19 percent) are accompanied by analysis that considers a wide range of different solutions or levels of stringency (see figure 5). For the alternatives that agencies do consider, reasonably thorough estimates of benefits are offered 37 percent of the time and reasonably thorough estimates of costs, 44 percent of the time. Reasonably thorough comparisons of net benefits of alternatives are offered for 39 regulations (30 percent).

Figure 5. Number of Regulations with Reasonably Thorough or Seriously Deficient Analysis of Alternatives



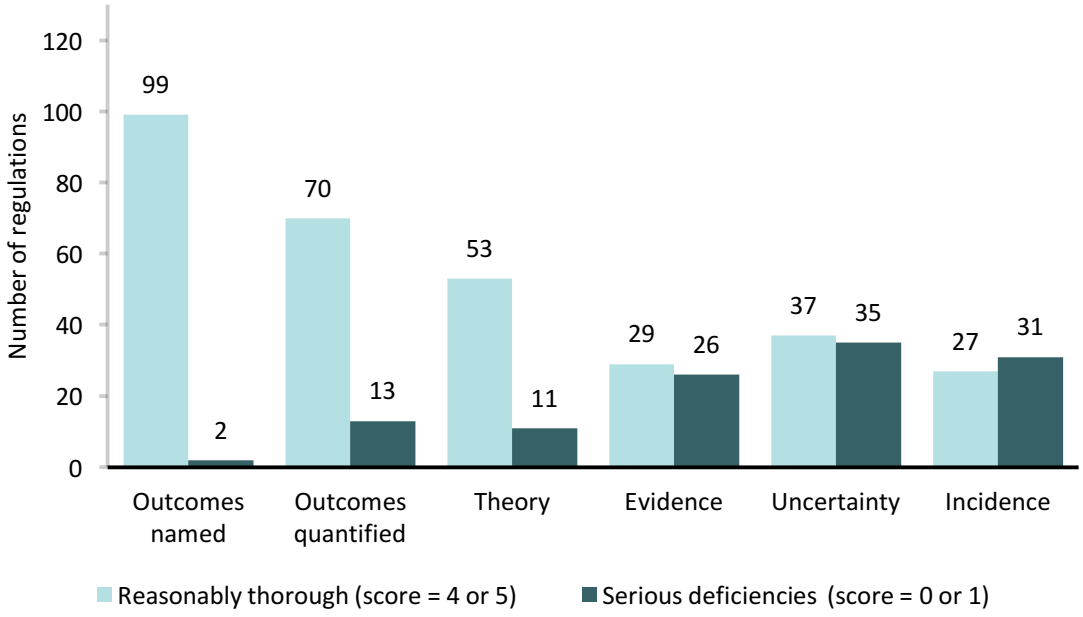
Note: Total regulations studied = 130.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

The number of regulations lacking significant analysis of alternatives is generally less than the number of regulations lacking significant analysis of the systemic problem.

Nevertheless, 40 regulations (31 percent) are accompanied by no significant analysis of the benefits of alternatives, and 44 regulations (34 percent) lack any comparison of net benefits.

Figure 6. Number of Regulations with Reasonably Thorough or Seriously Deficient Analysis of Benefits or Other Outcomes



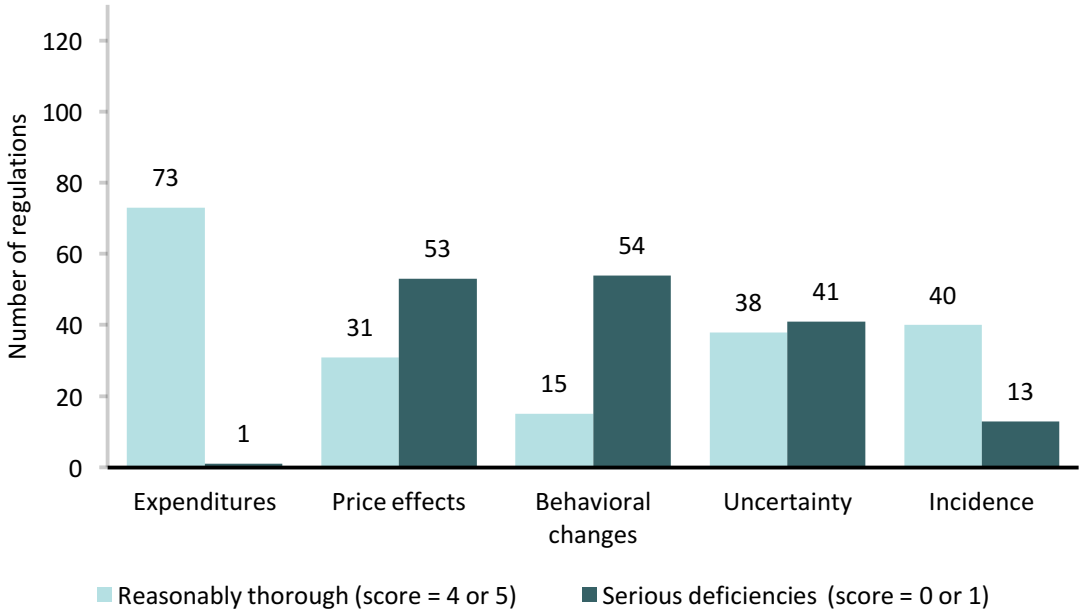
Note: Total regulations studied = 130.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Benefits. For three-quarters of the regulations, the agencies offered reasonably thorough explanations of the principal benefits they sought to achieve in the form of outcomes that affect citizens' quality of life. Analysis of the regulations' ability to deliver those benefits, however, lagged significantly. For 53 regulations (41 percent), the relevant agency offered a reasonably thorough and coherent theory explaining how the regulation would likely produce the desired outcome(s) (see figure 6). Reasonably thorough evidence showing that a given regulation would likely achieve the desired outcome(s) was presented for only 29 regulations (22 percent). RIAs offered reasonably thorough assessments of uncertainties affecting the size of benefits for 37

regulations (28 percent). A reasonably thorough assessment of the incidence (distribution) of benefits was present for just 27 regulations (21 percent). For evidence, uncertainty, and incidence, the number of regulations with a cursory analysis or no analysis was about the same as the number with a reasonably thorough analysis.

Figure 7. Number of Regulations with Reasonably Thorough or Seriously Deficient Analysis of Costs



Note: Total regulations studied = 130.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Costs. Agencies offered reasonably complete estimates of expenditures to implement and comply with the regulation for 73 regulations (56 percent). Virtually all remaining regulations had some type of cost estimate, but these were incomplete. Other aspects of regulatory costs received less thorough attention. RIAs assessed price effects reasonably thoroughly for just 31 regulations (24 percent) and analyzed costs resulting from behavioral changes reasonably thoroughly for just 15 regulations (12 percent; see figure 7). For these two criteria, the number of regulations lacking

any significant analysis far outstripped the number with a reasonably complete analysis. Reasonably thorough assessments of uncertainties affecting costs and the incidence of costs occurred for about one-third of the regulations.

Figure 8. Number of Regulations with Reasonably Thorough or No Explanation of How the Agency Used the Regulatory Impact Analysis

Note: RIA = regulatory impact analysis; total regulations studied = 130.
Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

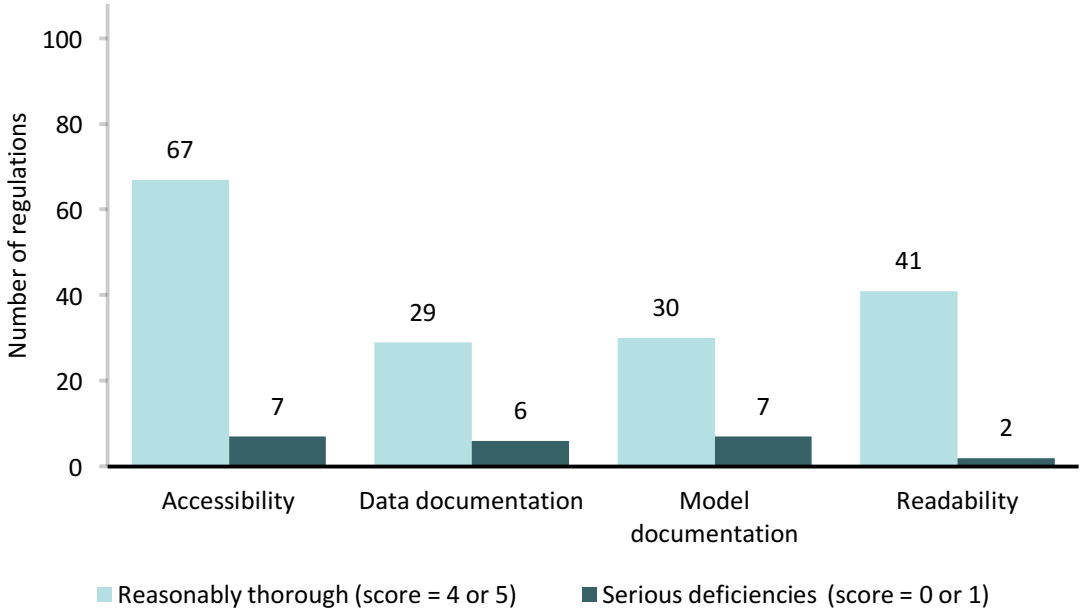
Use of analysis. Figure 8 charts the number of prescriptive regulations that are accompanied by a reasonably thorough explanation of how the agency used the RIA (score = 4 or 5) or no explanation of how the agency used the analysis (score = 0 or 1). Agencies offered reasonably thorough explanations of how some part of the analysis affected major decisions for 29 regulations (22 percent). For 77 regulations (59 percent), no explanation was offered of how any part of the analysis affected decisions. Similarly, agencies explained how net benefits influenced their decisions or explained other factors that outweighed net benefits for 42 regulations (32

percent). For 71 regulations (55 percent), agencies neither demonstrated that they chose the alternative that maximizes net benefits nor explained why they chose another alternative.

Retrospective analysis. The discussion of retrospective analysis requires no chart. Just one regulation was accompanied by analysis that offered a reasonably complete framework for retrospective analysis of the regulation. The vast majority of regulations scored below 5 points on the retrospective analysis criterion. In most cases, the analysis in the RIA could have been used to develop goals or measures to track the results of the regulation, or the RIA demonstrated that the agency had access to data that might be used for retrospective analysis. But agencies virtually never articulated any kind of plan for retrospective analysis in the RIA or NPRM.

Openness. Figure 9 reveals that the scores for the four openness criteria follow a different pattern from all the others. For all criteria except availability, the majority of analyses are neither reasonably thorough nor seriously deficient. Unlike the previous charts, very few regulations are in the seriously deficient category.

Figure 9. Number of Regulations with Reasonably Thorough or Seriously Deficient Approaches on Openness Criteria



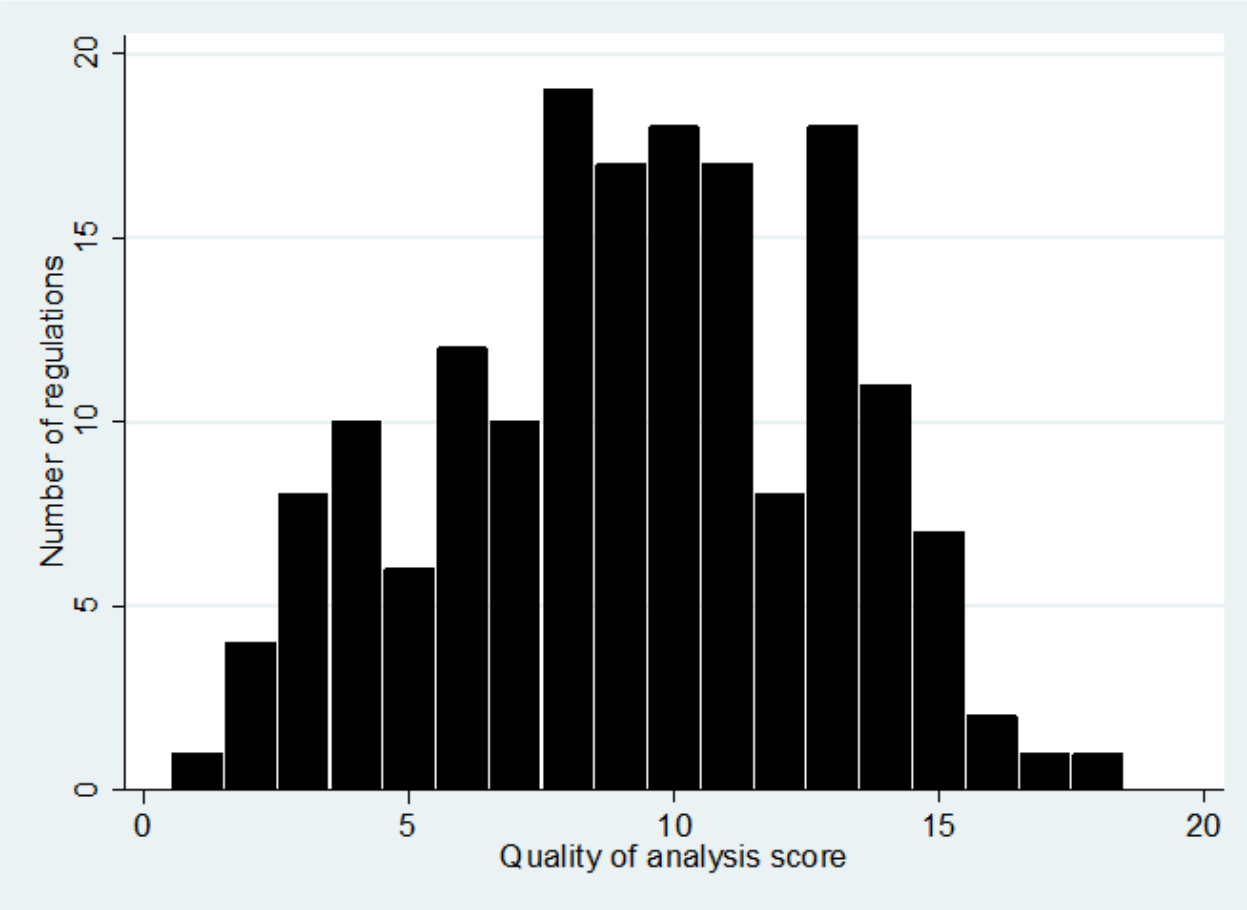
Note: Total regulations studied = 108.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

3.3. Scores Are Highly Variable

Although average scores are low, they are not uniformly bad. The scores are highly variable. For every criterion except openness, the standard deviation in table 3 is relatively high compared with the mean, indicating that the scores are fairly widely spread rather than clustered tightly around the mean. Figure 10, a histogram that shows the distribution of analysis scores, illustrates this point. How much of the variability shown is due to differences across agencies? Figures 11–15 rank agencies on the basis of their average scores.

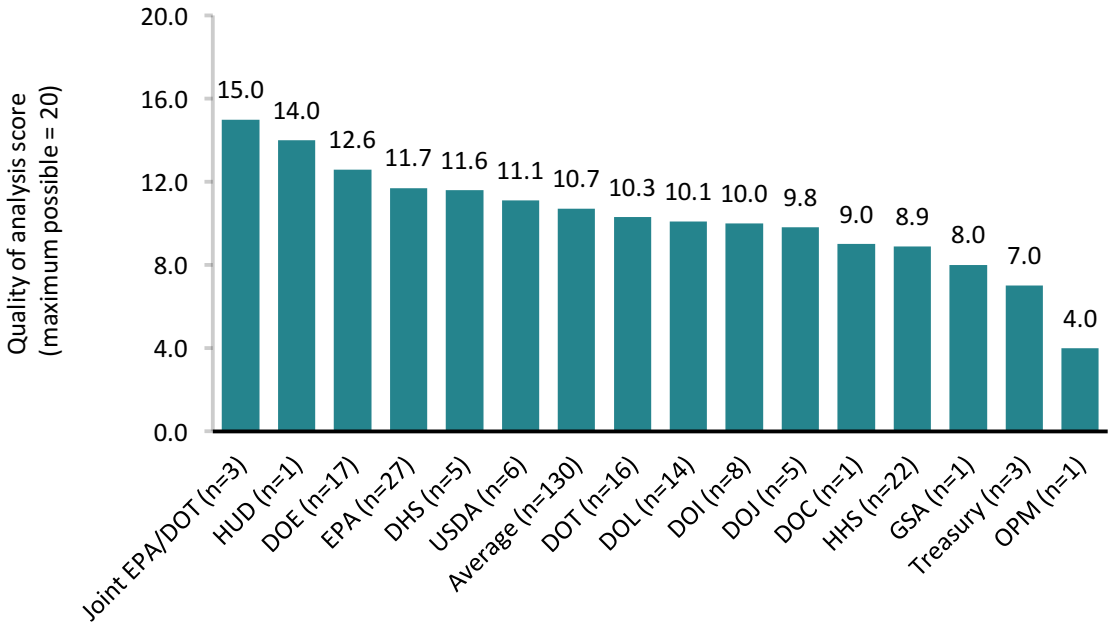
Figure 10. Histogram of the Distribution of Analysis Scores



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 11 appears to show a wide range of scores for quality of analysis, from an average of 15 points (joint EPA/DOT) down to an average of 4 points (OPM). Those two entities, however, proposed a small number of regulations during 2008–2013. For agencies that produced more than three regulations during this time period, average scores are clustered within 2 points of the average for all 130 regulations.

Figure 11. Average Quality of Analysis Scores by Agency

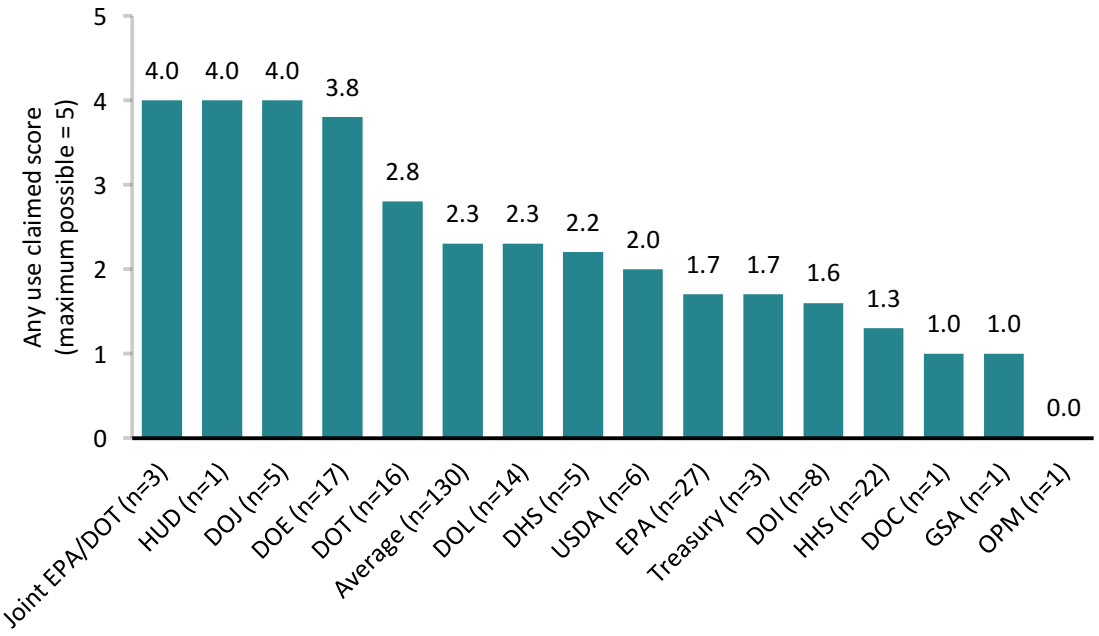


Note: Data are for prescriptive regulations proposed from 2008 to 2013. EPA = Environmental Protection Agency; DOT = Department of Transportation; HUD = Department of Housing and Urban Development; DOE = Department of Energy; DHS = Department of Homeland Security; USDA = US Department of Agriculture; DOL = Department of Labor; DOI = Department of the Interior; DOJ =Department of Justice; DOC = Department of Commerce; HHS = Department of Health and Human Services; GSA = General Services Administration; Treasury = Department of the Treasury; OPM = Office of Personnel Management.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figures 12 and 13, on the other hand, reveal relatively wide ranges in agency average scores for the criteria related to use of analysis. For any use of analysis, the average score ranges from a high of 4 points (joint EPA/DOT, HUD, and DOJ) down to 0 points (OPM). For cognizance of net benefits, the highest average score is 4.3 points (joint EPA/DOT). The lowest is 0 (OPM).

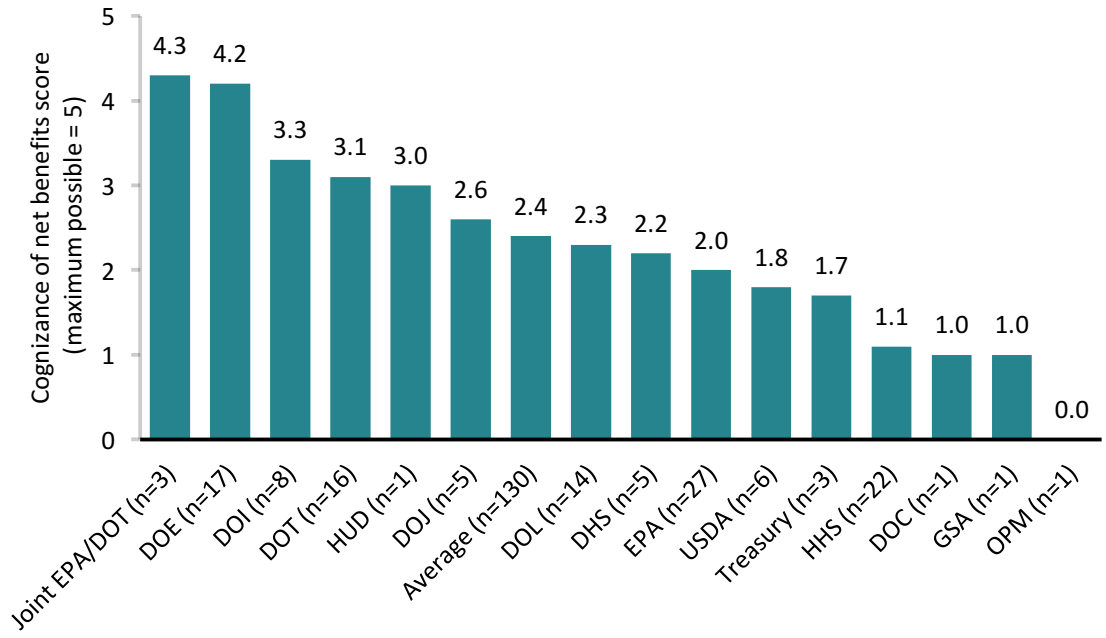
Figure 12. Average Use of Analysis Scores by Agency



Note: Data are for prescriptive regulations proposed from 2008 to 2013. EPA = Environmental Protection Agency; DOT = Department of Transportation; HUD = Department of Housing and Urban Development; DOJ = Department of Justice; DOE = Department of Energy; DOT = Department of Transportation; DOL = Department of Labor; DHS = Department of Homeland Security; USDA = US Department of Agriculture; Treasury = Department of the Treasury; DOI = Department of the Interior; HHS = Department of Health and Human Services; DOC = Department of Commerce; GSA = General Services Administration; OPM = Office of Personnel Management.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 13. Average Cognizance of Net Benefits Scores by Agency

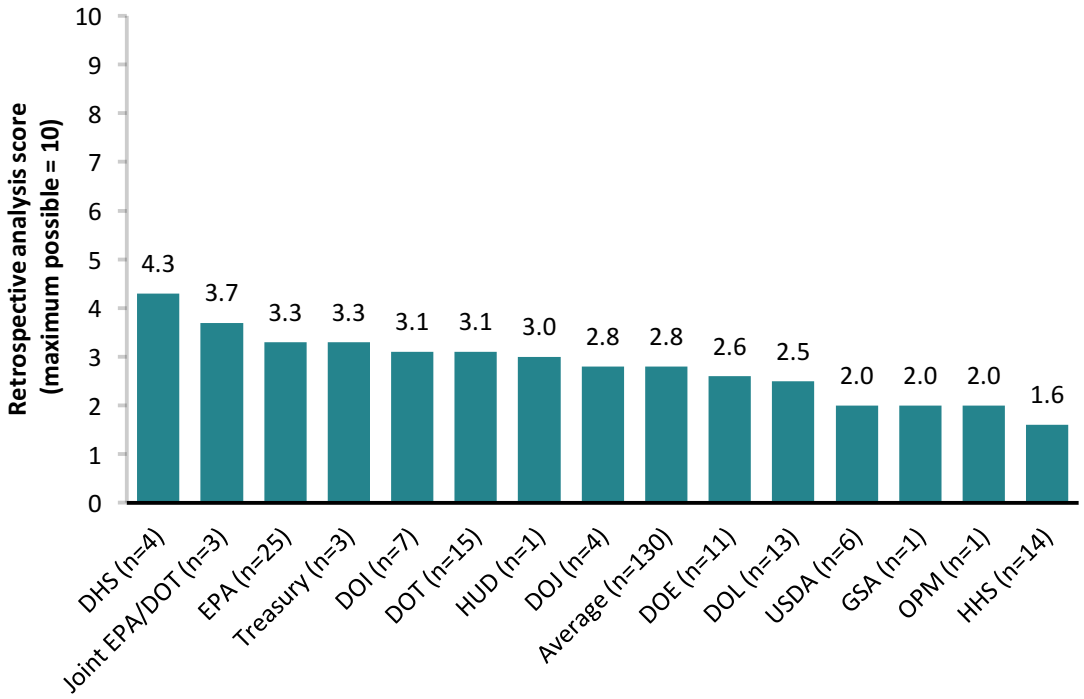


Note: Data are for prescriptive regulations proposed from 2008 to 2013. EPA = Environmental Protection Agency; DOT = Department of Transportation; DOE = Department of Energy; DOI = Department of the Interior; HUD = Department of Housing and Urban Development; DOJ = Department of Justice; DOL = Department of Labor; DHS = Department of Homeland Security; USDA = US Department of Agriculture; Treasury = Department of the Treasury; HHS = Department of Health and Human Services; DOC = Department of Commerce; GSA = General Services Administration; OPM = Office of Personnel Management.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 14 shows that agency average scores for retrospective analysis mostly fall within a narrow band. Just 2.7 points separate the highest and lowest agency averages. This narrow range occurs because the average scores for retrospective analysis are uniformly poor. Even the best agency average score is just 4.3 out of 10 possible points.

Figure 14. Average Retrospective Analysis Scores by Agency

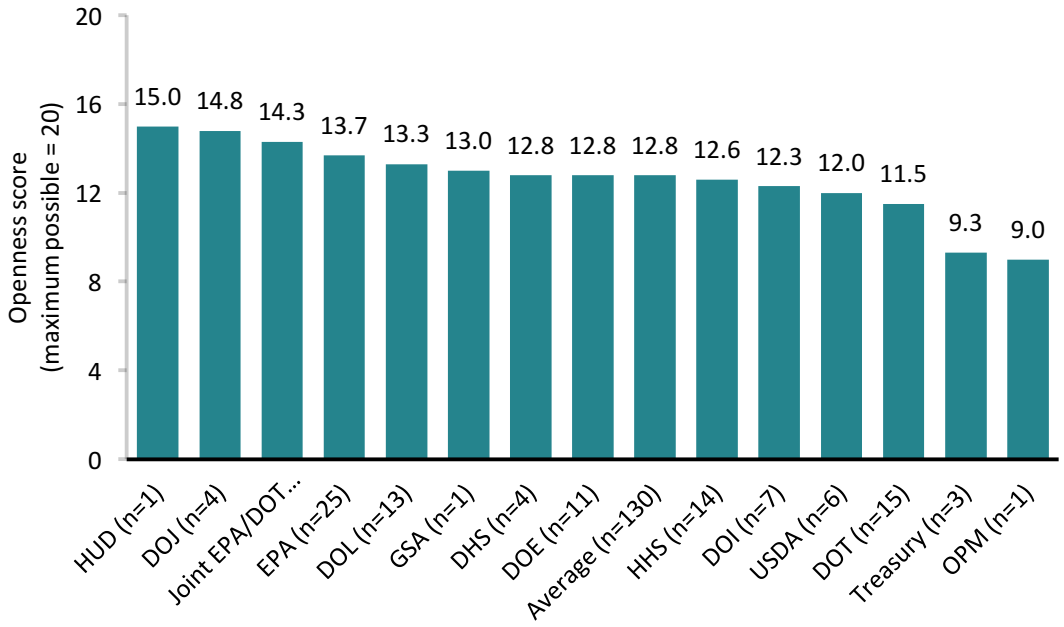


Note: Data are for 108 prescriptive regulations proposed from 2008 to 2012. DHS = Department of Homeland Security; EPA = Environmental Protection Agency; DOT = Department of Transportation; Treasury = Department of the Treasury; DOI = Department of the Interior; HUD = Department of Housing and Urban Development; DOJ = Department of Justice; DOE = Department of Energy; DOL = Department of Labor; USDA = US Department of Agriculture; GSA = General Services Administration; OPM = Office of Personnel Management; HHS = Department of Health and Human Services.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Finally, Figure 15 indicates that agency average scores for openness are fairly uniform, except for the Department of the Treasury, which proposed three regulations, and OPM, which proposed one regulation. All other agencies' average scores are within 2.2 points of the sample average.

Figure 15. Average Openness Scores by Agency



Note: Data are for 108 prescriptive regulations proposed from 2008 to 2012. HUD = Department of Housing and Urban Development; DOJ = Department of Justice; EPA = Environmental Protection Agency; DOT = Department of Transportation; DOL = Department of Labor; GSA = General Services Administration; DHS = Department of Homeland Security; DOE = Department of Energy; HHS = Department of Health and Human Services; DOI = Department of the Interior; USDA = US Department of Agriculture; DOT = Department of Transportation; Treasury = Department of the Treasury; OPM = Office of Personnel Management.

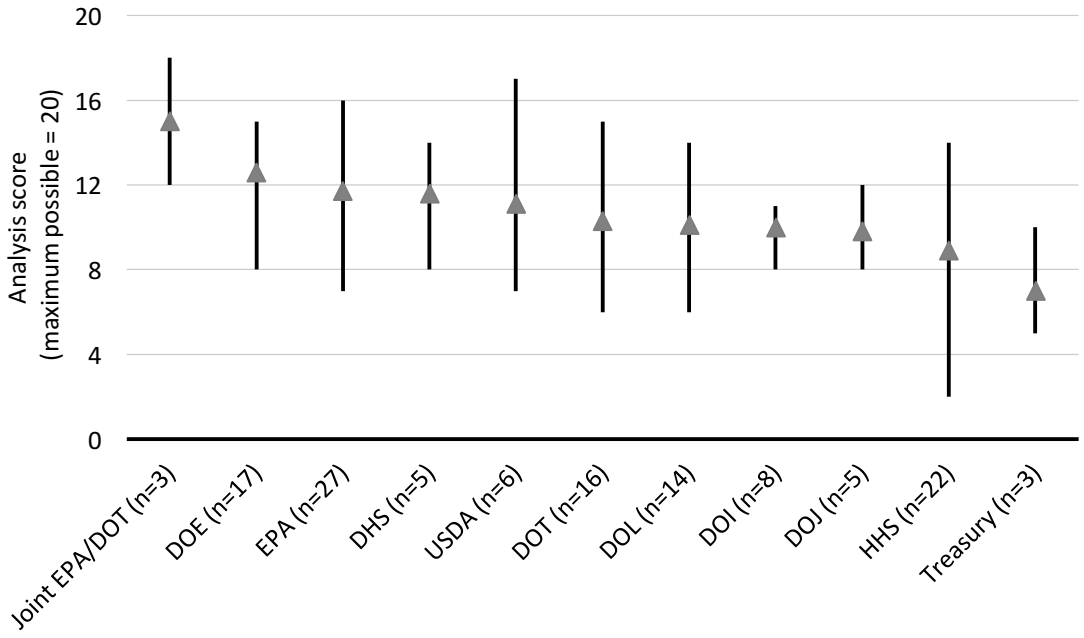
Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Although Report Card scores for individual regulations vary substantially, there is relatively little variation in average scores across agencies, except for the two criteria related to an agency's explanation of how it used the analysis for a given regulation. This suggests that agency-specific factors may play only a small role in explaining differences in the quality of analysis. The statistical analysis undertaken in section 5 of this paper, which controls for other factors that may affect the quality of analysis, confirms this casual impression conveyed by the raw data.

3.4. Variability Is High within Agencies

There is substantial variability in scores within many agencies. Within agencies, scores are often scattered along a wide range, with standard deviations relatively large compared with the mean. (Appendix C contains summary score statistics for each agency that issued more than one prescriptive regulation.) Figure 16 illustrates this variability by graphing the range of each agency's scores for quality of analysis. Each agency's mean score is indicated by a triangle inside the range. The Department of Health and Human Services (HHS) has the widest range of analysis scores, from a high of 14 points to a low of 2 points. The USDA spans the next largest range, from a high of 17 points to a low of 7 points. The relatively narrow ranges for two agencies—the Department of the Interior (DOI) and the Department of Justice (DOJ)—are the exceptions, not the rule. The DOI is, in fact, a special case because six of its eight regulations are the annual regulation that sets limits on migratory bird hunting. The DOI literally reused an identical RIA each year for the period studied. Small differences in this regulation's score in different years reflect the fact that the data used in the RIA may be less reliable as time passes.

Figure 16. Range of Analysis Scores for Agencies Issuing More Than One Regulation



Note: Data are for prescriptive regulations proposed from 2008 to 2013. Triangle indicates agency's mean score. EPA = Environmental Protection Agency; DOT = Department of Transportation; DOE = Department of Energy; DHS = Department of Homeland Security; USDA = US Department of Agriculture; DOL = Department of Labor; DOI = Department of the Interior; DOJ = Department of Justice; HHS = Department of Health and Human Services; Treasury = Department of the Treasury.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

3.5. Comparison with Prior Evaluations

Like prior evaluations of the quality of regulatory analysis, the Report Card evaluations reveal significant deficiencies. For some topics, the Report Card findings are similar to the results of checklist evaluations, but there are some differences. Where there are differences, the Report Card typically offers a less optimistic evaluation. This likely occurs because the Report Card contains a more in-depth assessment of quality.

Problem. Checklist evaluations have found that 70–80 percent of RIAs described a market failure or other problem as the motivation for the regulation (Shapiro and Morrall 2012; Fraas

and Lutter 2011b), and 100 percent of RIAs contained some type of statement of need for the regulation (GAO 2014). The Report Card found that only 42 percent of RIAs described a systemic problem reasonably thoroughly, and much smaller percentages of RIAs offered a coherent theory and evidence of the problem (figure 4).

Alternatives. Checklist evaluations find that 70–80 percent of RIAs discussed alternatives (GAO 2014; Hahn et al. 2000; Shapiro and Morrall 2012). Checklist evaluations also find that the percentage of RIAs that presented benefits, costs, or net benefits of at least some alternatives ranges between 25 percent (Hahn et al. 2000) and 77 percent (Fraas and Lutter 2011b). Similarly, the Report Card found that 70 percent of RIAs did a reasonably good job of identifying some alternatives. Sharply lower percentages of RIAs included a reasonably thorough analysis of the benefits (40 percent), costs (44 percent), or net benefits (30 percent) of alternatives (figure 5).

Benefits. Checklist evaluations find that 70–80 percent of RIAs quantified benefits (Hahn et al. 2000; Hahn and Dudley 2007), 50–76 percent monetized benefits (Hahn et al. 2000; Hahn and Dudley 2007; GAO 2014), and 28 percent monetized all benefits mentioned (Hahn et al. 2000). Shapiro and Morrall (2012) find that 73 percent of RIAs monetized all benefits and costs that were considered.

The Report Card found that 54 percent of RIAs quantified most benefits reasonably thoroughly (which usually included monetization), but only 41 percent offered a coherent theory of how the regulation would produce most of the benefits, and only 22 percent offered thorough evidence supporting the theory (figure 6).

Costs. Checklist evaluations find that 73–95 percent of RIAs quantified costs (Hahn et al. 2000; Hahn and Dudley 2007), 90–100 percent monetized some costs (Hahn et al. 2000; Hahn and Dudley 2007), and 63 percent monetized all costs considered (Hahn et al. 2000). The Report Card found that 56 percent of RIAs evaluated expenditures reasonably thoroughly—a figure that could be consistent with a higher percentage of RIAs that monetized some costs. However, much lower percentages of RIAs examined indirect costs that would result from price effects or other behavioral changes (figure 7).

This difference explains an apparent paradox when comparing the results of the Report Card with the results of checklist evaluations. Those evaluations usually find that higher percentages of RIAs have estimates of monetized costs than of monetized benefits, which implies that costs are easier to measure than benefits. The Report Card's average score for cost analysis, however, is 0.58 points lower than the average score for benefits analysis, and a *t*-test reveals that this difference is significant at better than the 99 percent level. A comparison of figures 6 and 7 reveals that, while most RIAs identified the major intended benefits, most RIAs lacked thorough analysis of entire categories of costs.

4. Explaining Variation in Report Card Scores

The preceding section offers general impressions based on the raw Report Card data. Variation in the quality and use of analysis could be explained by a wide variety of political, statutory, and institutional factors. This section outlines hypotheses and identifies variables that will be used to test each hypothesis econometrically. Appendix D lists all explanatory variables, along with summary statistics.

4.1. Political Party Controlling the Presidential Administration

Perhaps the simplest hypothesis about politics and regulatory analysis is that both the quality and use of RIAs vary systematically depending on which political party controls the administration. Republicans are widely perceived to be more skeptical of regulation than are Democrats. President Reagan adopted the executive order that initiated OIRA regulatory review and required that the benefits of a regulation must exceed the costs. Skeptics of regulatory impact analysis argue that it is biased against regulation (Ackerman and Heinzerling 2004). Shapiro and Borie-Holtz (2013) find that Republican control of state government tends to reduce the amount of regulation. It is thus at least conceivable that, if RIAs are indeed an antiregulatory tool, they might be more thorough or more likely to be used under a Republican administration.

There are equally valid reasons to expect little or no partisan difference in the quality or use of RIAs. Posner (2001) notes that analytical requirements and centralized review of regulations are tools that the president as principal can use to monitor and control the regulatory agencies. These tools should be useful to presidential administrations of either party. Consistent with this theory, all presidents since Jimmy Carter have issued executive orders requiring executive branch regulatory agencies to identify the problem they seek to solve and to evaluate the benefits and costs of alternative solutions (Katzen 2011, 13; see also EO 12044, EO 12291, EO 12866, EO 13422, and EO 13563). Seminal articles by DeMuth and Ginsburg (1986) and Kagan (2001) portray centralized regulatory review and RIAs as important tools for ensuring agency accountability under Presidents Reagan and Clinton, the two presidents who did the most to shape the current requirements and review process in the executive branch. President Clinton, the first Democrat to serve as president after Ronald Reagan issued EO 12291, explicitly retained OIRA review of significant regulations in EO

12866. Shapiro (2007) notes the similarities in the Clinton and George W. Bush administration's management of the regulatory process.

Prior empirical research generally finds little difference in the quality or use of RIAs under Republican or Democratic administrations. Hahn and Dudley (2007) find no difference in the quality of RIAs accompanying environmental regulations issued by the Reagan, George H.W. Bush, and Clinton administrations. Comparing regulations proposed from 2008 through 2010, Ellig et al. (2013) find no average difference in the quality or use of RIAs between the G.W. Bush and Obama administrations.

I test for partisan influence on regulatory analysis primarily with a dummy variable, *Obama*, which equals 1 if OIRA review of a regulation concluded during the Obama administration.

4.2. Administration Policy Priorities

Presidential administrations have increasingly sought to direct high-priority regulatory initiatives from the White House rather than just reacting to regulatory proposals developed by agencies. Occasional White House intervention to ensure that regulations reflect presidential policies is nothing new (McGarity 1991; Cooper and West 1988; West 2005). But Kagan (2001, 2248) credits the Clinton administration with initiating a new policy of centralized direction of regulatory activity: "The White House in large measure set the administrative agenda for key agencies, heavily influencing what they would (or would not) spend time on and what they would (or would not) generate as regulatory product." Even at the EPA, White House staff intervened to shape regulations that had significant political impact (Bressman and Vandenbergh 2006). John Graham, OIRA administrator under President G.W. Bush, describes instances in

which the president directed OIRA or agencies to initiate actions (Graham 2008). Graham himself pioneered the "prompt letter," which publicly requested that agencies initiate or expedite regulatory action or research relevant to regulatory decisions. President Obama continued to use the "administrative presidency" model (Shapiro and Wright 2011).

Centralized direction of high-priority regulation may reduce the quality of analysis for several reasons. First, it may affect the allocation of effort by agency analysts. Agency economists often focus their effort on the parts of an analysis that can affect decisions (Williams 2008, 14). Analysis has the most effect when it precedes decisions (see case studies in Morgenstern 1997). If most decisions are already made before an analysis is done, analysts are less likely to make a significant effort to produce a high-quality RIA.

Second, if decisions are made before analysis, analysts may face pressure to produce an RIA that justifies the decisions. The resulting RIA may be less objective and hence of lower quality. As one former federal government economist noted, after senior managers altered his cost and benefit estimates in an RIA, "Those in OMB who thought the benefits and costs were poorly estimated were told by the White House to back off" (Williams 2008, 9). Even some relatively recent and highly sophisticated RIAs offer limited discussion of alternatives and have been characterized as "litigation support documents" or analyses of decisions already made for other reasons (Wagner 2009, 57). "Too often," notes former OIRA administrator Sally Katzen (2011, 126), "agencies conduct analyses after decisions have been made, to comply with legislative and executive branch requirements rather than develop the analysis to inform policy decisions."

Third, White House direction of high-priority regulatory initiatives effectively prevents OIRA from credibly threatening to return a regulation to the agency for low-quality analysis or for failing to demonstrate that "the benefits of the intended regulation justify its costs" (EO

12866, § 1(b)(6)). Because White House staff, and perhaps the president, have already decided to allow the regulation to proceed, the OIRA administrator knows that an appeal to block a regulation initiated at the White House would fail.

Consistent with these theories, Ellig and Conover (2014) find that interim final regulations issued under tight legislative deadlines that implemented the most significant priorities of the two most recent presidential administrations—homeland security for President G. W. Bush and health care for President Obama—were accompanied by RIAs that were significantly less thorough than those that typically accompany economically significant regulations. Aside from the special case of interim final regulations, these authors find that statutory deadlines did not correlate with the quality of regulatory analysis. Because of data limitations, however, their assessment included only the quality of analysis criteria from the Report Card.

It is difficult, if not impossible, to identify how every regulation ranks in terms of an administration's policy priorities. Following Ellig and Conover (2014), I include a *Presidential priority* dummy variable that equals 1 if a regulation addresses a signature policy priority for either administration—homeland security under President Bush and health care under President Obama.

4.3. Agency Policy Preferences

Posner (2001) hypothesizes that presidential administrations as principals use analytical requirements and centralized review to control agencies. He also suggests a corollary: an administration will demand less thorough analysis from agencies that it trusts to carry out its policies. The political ideology of an agency or its managers could thus affect the extent of

analysis the agency is required to conduct. Posner suggests that this insight could be tested if agency ideology could be measured.

Clinton and Lewis (2008) developed an index that measures agency policy preferences. They asked academics, journalists, and policy experts to rate agencies' policy views on the basis of "law, practice, culture, or tradition." Thus, the Clinton–Lewis approach can be thought of as an attempt to measure more permanent institutional policy preferences. Numerical values for agencies included in their model range from −2.07 (Action—an agency overseeing government-sponsored volunteer efforts—most liberal) to 2.40 (Department of the Navy, most conservative). Numerical values for regulatory agencies in the Report Card sample range from −1.43 (Department of Labor, most liberal) to 1.25 (Department of Commerce, most conservative). Using this index in regressions, Shamoun and Yandle (2016) find that OIRA returns fewer regulations from more conservative agencies under Republican administrations and that more liberal agencies withdraw more regulations from OIRA consideration under Republican administrations.

If Posner's theory is correct, the agency policy preference variables should have opposite correlations with the quality or use of analysis in the Bush and Obama administrations. The Bush administration would be expected to have greater trust in the more conservative agencies and hence allow them to promulgate regulations with less thorough analysis—and vice versa for the Obama administration. Prior econometric research interacted each political preference variable with an administration dummy variable, thus creating two separate variables that would have opposite signs if an agency behaved differently under different administrations based on the agency's policy preferences (Ellig, McLaughlin, and Morrall 2013). This approach, however, would create perfect collinearity in the model used in this paper, which includes an

administration dummy variable and agency-specific fixed effects. Instead, this paper uses a single variable, *Agency policy preference*, whose value is equal to the agency's Clinton–Lewis score but with its sign reversed during the Obama administration.

4.4. Midnight Regulation

The term "midnight regulation" refers to the well-documented surge of regulations that tends to occur at the end of four-year presidential terms, between Election Day and Inauguration Day (Arbuckle 2011; Brito and de Rugy 2009; Howell and Mayer 2005). Regulatory output (as measured by the number of pages in the *Federal Register*) is positively correlated with turnover in the president's cabinet, a lame duck presidency, and a switch in party control of the presidency (de Rugy and Davies 2009; Cochran 2001). As a result, the surge occurs at the end of most presidential terms but is larger when the president is leaving office and the incoming president is from the other party. Midnight regulations may reflect an administration's conscious strategy to tie the next administration's hands or to put off controversial regulations until there are no electoral consequences (Brito and de Rugy 2009; Beermann 2003). They may also result simply from procrastination or presidential appointees' desire to finish as much work as possible before leaving office (Cochran 2001; Dudley 2009).

Midnight regulations are likely to be accompanied by lower-quality RIAs or less careful consideration of those analyses in decisions, for several reasons. First, the process of analyzing and developing midnight regulations by an issuing agency may be rushed (Brito and de Rugy 2009; Dudley 2001). Second, midnight regulations may receive less thorough OIRA review. The spikes in regulatory activity can overwhelm OIRA's review capacity (Brito and de Rugy 2009), and midnight regulations receive shorter OIRA reviews (McLaughlin 2011). Third, midnight

regulations may reflect important administration policy priorities. As discussed, if significant decisions about a regulation were already made at high levels before the RIA was completed, the agency has less incentive to conduct a high-quality analysis or explain how the analysis affected its decisions. Reduced quality and use of analysis may explain Shapiro and Morrall's (2012) finding that midnight regulations have lower net benefits than do other regulations.

The Report Card evaluates the analysis accompanying proposed regulations. Because proposed regulations must be published for public comment, regulations finalized during the midnight period are usually proposed before the midnight period commences. McLaughlin and Ellig (2011) estimate that economically significant prescriptive midnight regulations proposed in 2008 had lower-quality RIAs than did other economically significant prescriptive regulations proposed in 2008. Using Report Card score data for 2008–2010, Ellig, McLaughlin, and Morrall (2013) find that midnight regulations had lower-quality analysis and lower scores for use of analysis than did other economically significant prescriptive regulations. They also find that so-called midnight leftovers—regulations proposed by the Bush administration but left for the Obama administration to finalize—had lower scores for openness and use of analysis than did other economically significant prescriptive regulations.

These empirical studies use an unconventional definition of midnight regulation. Because the Bush administration sought to curb midnight regulations, the president's chief of staff instructed agencies that regulations they expected to finalize before the end of the president's term had to clear OIRA review by June 1 (Bolten 2008). Because the empirical studies examined the RIAs for proposed regulations, they defined a midnight proposed regulation as a regulation (1) whose OIRA review of the proposal was completed after June 1, 2008, and (2) that became a final rule between Election Day and Inauguration Day. Similarly,

midnight leftovers were defined as regulations whose proposed version cleared OIRA after June 1, 2008, and were not adopted as final regulations by Inauguration Day. These definitions leave out the midnight regulations or leftover regulations whose proposed versions cleared OIRA review before June 1.

The empirical analysis in this paper accounts for all midnight and leftover regulations, not just the ones whose proposed versions cleared OIRA after June 1. To check for consistency with previous results and test whether the June 1 deadline makes a difference in the quality or use of analysis, I segment midnight and leftover regulations into two groups with separate dummy variables. *Bush post–June 1 midnight* and *Bush post–June 1 leftover* indicate midnight or leftover regulations whose OIRA reviews concluded after June 1, 2008. *Bush pre–June 1 midnight* and *Bush pre–June 1 leftover* indicate midnight or leftover regulations whose OIRA reviews concluded before June 1.

Because the dataset covers the years 2008–2013, it is also possible to include a dummy variable for regulations that potentially could have been midnight regulations in the Obama administration. Prior research indicates that there is usually a smaller surge of midnight regulations at the end of a president's first term, even if he is reelected (Cochran 2001; de Rugy and Davies 2009). Only one of President Obama's potential midnight regulations became final in the midnight period following his 2012 victory. However, at the time those regulations were developed and proposed, the outcome of the 2012 election was unknown. If Mitt Romney had won, any Obama administration regulations that were proposed but not finalized by Election Day could have become final regulations during the midnight period.[9] We cannot

[9] An anonymous reviewer suggested that these regulations may be controversial regulations that were held up because of the election season rather than midnight regulations. But a key reason for midnight regulations is that

know which of the regulations would have become midnight regulations if President Obama had lost the 2012 election. For this reason, I do not attempt to distinguish between midnight and leftover regulations in the Obama administration. A pair of dummy variables, *Obama post–June 1 midnight* and *Obama pre–June 1 midnight*—defined similarly to the Bush midnight variables— test whether potential Obama administration midnight regulations have significantly lower scores.

4.5. Political Salience

The political salience of a regulation could arguably lead either to better or worse analysis and use of analysis in decisions. McCubbins, Noll, and Weingast (1987) argue that one purpose of the Administrative Procedure Act is to ensure that politically controversial regulations get extensive public discussion and generate a thorough public record of information. Agencies would conduct the most careful analyses for the most controversial regulations and explain extensively how their decisions are grounded in analysis to protect them from criticism by interest groups.

On the other hand, Shapiro and Morrall (2012) find that rules with greater political salience (measured by the number of public comments) have lower net benefits than do other rules. This suggests that political factors play a greater role in decision-making for politically controversial rules. In such circumstances, agency analysts have less incentive and ability to conduct a thorough analysis, and an agency may be less concerned about explaining how an analysis affected its decisions.

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they allow the administration or the president's party to avoid political accountability because they are issued after the election. Thus, one reason midnight regulations occur is precisely because administrations hold controversial regulations until after the next presidential election.

It is also possible that both theories could be right. A report on the public comment process prepared for the Administrative Conference of the United States notes that "for the most part . . . significant effects are limited to comments that exhibit high levels of sophistication" (Balla 2011, 35). Highly controversial regulations, however, often motivate affected interests to organize their members to send mass-produced postcards or emails to the agency supporting or opposing a regulation. These messages may indicate a significant amount of public interest, but they are unlikely to have a substantive effect on the regulation or accompanying analysis. Thus, it is possible that at some level more comment activity indicates that agencies will produce better analyses or better explanations of how an analysis influenced a decision, as McCubbins, Noll, and Weingast (1987) imply. But a very large number of comments with little new information merely indicates political controversy, which may diminish the quality or use of analysis, as Shapiro and Morrall (2012) argue.

I use three variables to indicate the political salience of a regulation. The first is *Public comments*, a count of the total number of comments filed in the docket for each regulation. The second is the square of *Public comments*, which controls for the possibility of a nonlinear relationship. These variables do not purport to measure the direct effect of public comments, because the dependent variables are scores for the quality and use of the regulatory analysis conducted before the agency received any public comments. But I assume that a regulation that generates more comments is more politically visible. The third variable, *Petition*, is a dummy variable that indicates whether the proposed regulation was at least partially a response to a petition from a member of the public to initiate a proceeding or reconsider an existing regulation. The existence of a petition obviously indicates that the potential for regulation affected someone enough to make it worth filing a petition. A petition may indicate that other political activity is

also afoot. For example, the petitioning party may also be actively sharing its concerns with members of congressional oversight committees.

4.6. Deadlines

Congress seeks to control regulatory agencies through oversight, budgeting, and approval or disapproval of presidential nominees (Wood and Waterman 1991; Moe 1985; McCubbins 1985; Calvert, McCubbins, and Weingast 1989). Changes in legislation or appropriations that affect regulatory agencies must first pass through the relevant committees, which have a great deal of power to block changes (Weingast and Marshall 1998; Weingast 1981). Empirical research demonstrates that agencies respond to their oversight committees (Moe 1985; Weingast and Moran 1983; Weingast 1984). Elections, however, may result in so-called legislative drift (Epstein and O'Halloran 1994; Gersen and O'Connell 2008). The majorities on committees and in Congress that wrote and approved the legislation authorizing a regulation may not be the same majorities that oversee an agency when a regulation is written. To mitigate this problem, authors of legislation include statutory deadlines to help ensure that agencies write regulations while the coalition that passed the legislation is still in power (Gersen and O'Connell 2008, 936).

Statutory deadlines could have both direct and indirect effects on the quality and use of regulatory analysis. The direct effect is that agencies have less time to conduct analyses and write regulations, a limit that may reduce the quality of analysis or decisions (Gersen and O'Connell 2008, 933). The indirect effect is that a deadline can prompt an agency to pay more attention to congressional policy preferences. Like presidential direction, congressional direction of regulatory activity may reduce an agency's incentives or opportunity to conduct a high-quality analysis and use it as an aid in decisions.

In a study of regulatory deadlines between 1987 and 2003, Gerson and O'Connell (2008, 945–46) found that deadlines shortened the average duration of rulemaking. Abbott (1987a; 1987b) cites multiple instances in which deadlines forced agencies to issue costly regulations that generated little benefit or to make key decisions about regulations before risk assessments or RIAs were completed. McLaughlin and Ellig (2011) find that economically significant regulations with statutory deadlines proposed in 2008 had lower-quality analysis, but only because their sample included budget regulations, which often have statutory deadlines and low-quality analyses. Ellig and Conover (2014) report that statutory deadlines in general are not associated with a lower-quality analysis, but the combination of very short deadlines and presidential direction associated with interim final homeland security and healthcare regulations is associated with a lower-quality analysis.

Judicial deadlines may also compromise the quality of RIAs. One reason is simply that a deadline reduces the amount of time available to an agency to conduct an analysis. In addition, judicial deadlines may accompany settlements that dictate the substance of new rules before any regulatory analysis has been conducted. The RIA then becomes an exercise in justifying the regulation, and the settlement ties OIRA's hands (Graham and Liu 2014, 443–44).

To test whether deadlines are correlated with the quality or use of regulatory analysis, I use a pair of dummy variables equal to 1 if a regulation was subject to a statutory or judicial deadline. Separate variables seem advisable because agencies seem willing to ignore statutory deadlines (Atherly 2015) but loathe to ignore judicial deadlines.

4.7. Statutory Constraints on Agency Authority

Agency economists who conduct regulatory impact analysis often take a value-of-information approach when deciding how to focus their efforts. That is, they devote more effort to analysis when Congress has not mandated a specific regulatory approach, and they put the most effort into parts of an analysis that might actually affect decisions (Williams 2008, 14). Research on the effects of economic analysis most frequently finds that such analysis affects regulatory decisions on the margins (Hahn and Tetlock 2008; Morgenstern and Landy 1997). Therefore, the quality of RIAs could be expected to vary widely, depending on the number, extent, and significance of the margins on which an agency has decision-making authority.

Statutory constraints on agency authority affect these margins. Agencies are often reluctant to analyze alternatives that are not within their current statutory authority, despite OMB guidance urging them to do so (OMB 2003, 17).[10] They see little point in doing so because they cannot select the alternatives, and such analysis may be viewed as usurping congressional prerogatives. For example, the NPRM for a DOT regulation proposed in 2010 to restrict truckers' work hours considered three alternatives that were all variations on the same basic approach: limit driver work time and require a break. DOT (2010, 82195) notes, "This rule is targeted at preventing driver fatigue, and the Agency is unaware of any alternative to restricting driver work *that the Agency has authority to implement* that would address driver fatigue" (emphasis added). Indeed, some commentators oppose statutory imposition of uniform RIA requirements because they believe agencies need the flexibility to

[10] President Reagan's EO 12291 explicitly required agencies to describe the potential benefits, costs, and net benefits of a proposed rule and any lower-cost alternatives, along with providing an explanation of the legal reasons that the lower-cost alternatives could not be adopted. EO 12866, which replaced EO 12291, directs agencies to assess "available" alternatives or "reasonably feasible" alternatives (§§ 1(b)(3) & 6(a)(3)(C)(iii)).

vary their analytical approaches to reflect differences in agency authority and missions (Katzen 2015).

In the following econometric analysis, six different variables control for statutory limitations on agencies' decision-making authority. Each regulation is coded with four dummy variables that indicate generic types of constraints on agency authority:

- *Regulation required* indicates whether a given statute required the agency to issue a new regulation or the agency had the option of taking no new regulatory action
- *Prescribed form* indicates whether the statute prescribed the form of the regulation (such as an emission standard or information disclosure) or the agency had the authority to determine the form of the regulation
- *Prescribed stringency* indicates whether the statute prescribed the stringency of the regulation or the agency had some meaningful degree of control over the stringency of the regulation
- *Prescribed coverage* indicates whether the statute prescribed the coverage of the regulation or the agency had some meaningful degree of authority to decide what entities the regulation covered.

If agencies systematically focus their analyses on margins at which they have decision-making authority, those constraints should be associated with lower-quality analyses and less use of analysis in decision-making.

In addition, in this paper, two dummy variables control for two types of regulations whose authorizing legislation contains specific constraints on agency decision-making criteria. When the EPA sets National Ambient Air Quality Standards (NAAQS) under the Clean Air Act, the agency is prohibited from considering compliance costs. This constraint should induce the

EPA to engage in less extensive analysis (or at least less extensive cost analysis) for NAAQS regulations. When the DOE adopts energy efficiency standards under the Energy Policy and Conservation Act (EPCA), it is required to consider seven factors: (1) the economic impact of the proposed standards on manufacturers and consumers, (2) the savings in operating costs over the life cycle of the product, (3) the total energy (or water) savings likely to result from the standard, (4) any lessening of utility of the product as a result of the standard, (5) any effect on competition, (6) the need for national energy (or water) savings, and (7) any other factors the secretary of energy believes are relevant (see DOE 2013, 55895). Although these constraints are not quite the same as a benefit-cost or net benefit test, they certainly require the DOE to consider several significant categories of benefits and costs. Because these constraints create opportunities for benefit and cost information to affect regulatory decisions, they should induce the DOE to engage in more extensive analysis of benefits and costs and offer more extensive explanations of how the analysis affected the agency's decisions.

Finally, the retrospective analysis equations use one additional dummy variable—*Review required*—which equals 1 if the legislation authorizing a given regulation requires the agency to periodically review the regulation. Such requirements rarely involve a full retrospective analysis of a regulation's benefits and costs. Nevertheless, the variable is included to see whether a statutory requirement that the agency revisit the regulation encourages any type of provision for retrospective analysis when the regulation is written.

4.8. Relative Influence of OIRA

OIRA review is the primary enforcement mechanism intended to ensure that agencies produce high-quality regulatory analyses and use those analyses to inform their decisions. When OIRA

has less political clout with a presidential administration, OIRA is less likely to be able to return regulations to agencies. Therefore, we might expect to see lower-quality or less-heeded analysis when regulations are reviewed under an acting OIRA administrator rather than one who is a presidential appointee.

Using 2008–2010 data, Ellig, McLaughlin, and Morrall (2013) find that the period early in the Obama administration before Cass Sunstein's confirmation as OIRA administrator was not associated with lower-quality RIAs but that agency explanations of net benefits were less extensive for regulations whose OIRA review concluded during this period. The longer period covered by this paper includes regulations reviewed between August 21, 2012, and June 27, 2013, when OIRA was headed by an acting administrator after the departure of Sunstein and before the confirmation of Howard Shelanski. A dummy variable, *Acting OIRA administrator*, indicates whether OIRA review of a regulation concluded when OIRA was headed by an acting administrator rather than by a presidential appointee.

4.9. Economic Impact

OMB *Circular A-4* directs agencies to undertake a formal quantitative analysis of uncertainty for regulations with economic effects exceeding $1 billion annually (OMB 2003, 41). These regulations may have a higher score for quality of analysis because the Report Card explicitly awards points for uncertainty analysis and because the research required to develop an uncertainty analysis may also generate additional information that improves other aspects of an RIA. Such regulations may also have a higher score if agencies simply conduct more thorough analysis for regulations that have larger impacts. The regressions presented include a dummy

variable that equals 1 if an agency indicated that either the benefits or the costs of a given regulation exceed $1 billion annually.

4.10. Timing

The quality of regulatory analysis arguably fluctuates in a predictable manner over the life cycle of a presidential administration. The Report Card sample begins with the final year of the G. W. Bush administration. In the final year of an administration, the quality of analysis may be relatively high because regulatory initiatives have been under development for a long time (except for midnight regulations). Similarly, many regulations proposed in the first year of a new administration may have had a relatively high-quality analysis because they were under development in the prior administration. When a new administration starts proposing its own regulatory initiatives during its first term, however, the quality of analysis could be expected to fall because the regulations and accompanying analyses, being new, were developed relatively quickly. After a few years, the quality of analysis could be expected to start rising again as the administration starts proposing regulations whose development was not rushed. The quality of analysis could thus be expected to follow a u-shaped trend from 2008 through 2013.

The regressions presented control for this potential pattern by including a dummy variable for each year after 2009.[11] If the time pattern described occurs, the year variables should show a temporary dip in the quality of analysis after 2009.

[11] Use of a dummy variable for each year of the Obama administration would be completely collinear with the variable indicating the Obama administration.

4.11. Agency-Specific Effects

Some agencies may produce better analysis than others simply because of their history, mission, experience, culture, or myriad other unobservable unique factors (see Katzen 2015). For this reason, most of the regressions control for agency-specific fixed effects.

4.12. Regulation Type

Analytical methods for assessing the effects of some types of regulations may be more developed than those for other types, or some types of regulations may be inherently more difficult to analyze. Various commentators have argued that different types of noneconomic regulations each have inherent challenges that make them uniquely difficult to analyze:

- Civil rights and privacy regulations may be more difficult to analyze because they involve benefits or costs that may be difficult to quantify or monetize (OMB 2014, 7–8; Dudley 2015, 5).
- Environmental regulations may be more difficult to analyze because they require analysts to make highly controversial assumptions about chains of causality and the value of health and human life.
- Financial regulations may be more difficult to analyze because they seek to prevent high-impact events, such as financial crises, whose probability and cost are unknown (Coates 2015; Gordon 2014).
- The benefits of security regulations may be more difficult to analyze (OMB 2014, 3). Security regulations seek to prevent high-impact events, such as terrorist attacks, whose probability and cost are unknown.

The most straightforward way to test for differences across types of regulations is to control for them directly with dummy variables indicating the type of regulation (omitting an agency's fixed effects to avoid collinearity). One model presented includes separate dummy variables for *Civil rights* (4 percent of sample), *Environment* (45 percent of sample), *Financial* (6 percent of sample), *Health care* (12 percent of sample), *Safety* (24 percent of sample), and *Security* (4 percent of sample). The omitted category in the regressions is economic regulations. Economic regulations from executive branch agencies constitute 6 percent of the sample. These cover topics such as administrative allocation versus auctions of landing slots at airports, mandated employee benefits, terms of energy leases on the Outer Continental Shelf, and the wage methodology for workers on H-2B visas.

5. Econometric Analysis

A threshold question is whether the substantial list of explanatory variables presented here suffers from collinearity. Three types of tests suggest that this problem is quite limited. The simplest method is to examine correlation coefficients between the variables. A popular rule of thumb suggests that multicollinearity may be significant if a correlation coefficient exceeds 0.8 or 0.9 (Farrar and Glauber 1967). Just one correlation coefficient—between EPCA and the DOE—reaches such a high level, because EPCA regulations make up the majority of DOE regulations. Only three other correlation coefficients exceed 0.5, and the overwhelming majority are below 0.2. Another statistic indicating multicollinearity is the variance inflation factor. A high factor indicates significant multicollinearity, but there is little agreement on what level counts as high (Belsley, Kuh, and Welsch 1980, 93). The mean variance inflation factor is 3.53, dropping to 3.02 when the *Obama* variable (which is correlated with the year dummy variables) is omitted and dropping to

2.16 when the *EPCA* variable is omitted. Finally, Belsley, Kuh, and Welsch (1980, 153) suggest that a condition number exceeding 15 or 30 could indicate significant multicollinearity. The condition number is 28.76, dropping to 18.24 when the *Obama* variable is omitted and to 14.74 when *EPCA* is also omitted. Thus, it appears that collinearity is not a concern, except for two variables intentionally included to test specific hypotheses. When *Obama* and *EPCA* are not statistically significant, the text that follows includes appropriate caveats on interpretation.

This section first outlines the econometric models presented in tables 4, 5, and 6. To minimize repetitiveness, results for specific explanatory variables from all three tables are subsequently discussed together for each explanatory variable.

Table 4 reports regressions for which the dependent variable is the overall quality of analysis. Four different estimators yield very similar results. Because the dependent variables are ordinal, it is likely that ordered logit is the most appropriate econometric method. The dependent variable in an ordered logit regression equation is the log of the ratio of the odds that the score will or will not have a designated value (Theil 1971, 634). The coefficients in an ordered logit regression estimate how each explanatory variable affects this odds ratio.

Table 4. Quality of Analysis Score for 130 Prescriptive Regulations

	Ordered Logit†	Ordered Logit BUC Fixed Effects	OLS Fixed Effects†	Ordered Logit†
Obama administration	−1.23 (0.87)	−1.85 (1.27)	−1.44 (0.93)	−1.85 (1.06)
Presidential priority	1.33 (2.32)**	0.84 (1.60)	0.96 (1.53)	2.11 (1.90)*
Agency policy preference	−0.48 (1.22)	−0.31 (1.17)	−0.33 (0.95)	−0.35 (1.02)
Bush post–June 1 midnight regulation	−2.99 (2.44)**	−3.49 (2.68)***	−2.93 (2.02)**	−3.30 (2.52)**
Bush pre–June 1 midnight regulation	−3.42 (3.43)***	−3.13 (3.13)***	−3.00 (3.11)***	−3.07 (2.16)**
Bush post–June 1 leftover	−1.89 (2.08)**	−2.53 (2.55)**	−2.14 (2.03)**	−2.72 (2.17)**
Bush pre–June 1 leftover	−0.36 (0.30)	−0.46 (0.46)	−0.53 (0.44)	−2.11 (1.70)*
Obama post–June 1 potential midnight	−1.85 (2.21)**	−1.60 (1.84)*	−2.20 (2.12)**	−1.92 (1.56)
Obama pre–June 1 potential midnight	−0.52 (0.75)	−0.38 (0.73)	−0.70 (0.88)	−0.57 (1.05)
Public comments	0.00001 (0.65)	0.00001 (1.96)**	0.00002 (1.30)	0.00001 (0.85)
Public comments^2	−5.10e-11 (0.80)	−5.22e-11 (2.39)**	−7.33e-11 (1.49)	−5.22e-11 (0.92)
Petition	0.41 (0.42)	0.69 (0.77)	0.79 (0.55)	0.04 (0.04)
Statutory deadline	−0.78 (0.83)	−0.26 (0.28)	−0.48 (0.45)	0.13 (0.18)
Judicial deadline	0.25 (0.26)	0.77 (1.05)	0.45 (0.46)	0.53 (0.72)
Regulation required	0.20 (0.55)	−0.09 (0.18)	−0.14 (0.30)	−0.26 (0.74)
Prescribed form	0.24 (0.34)	0.27 (0.48)	0.50 (0.63)	1.03 (1.47)
Prescribed stringency	−0.53 (1.10)	−0.53 (1.26)	−0.53 (0.76)	−0.85 (1.91)*
Prescribed coverage	−0.09 (0.17)	−0.04 (0.09)	0.01 (0.02)	−0.13 (0.26)
NAAQS	2.33 (5.31)***	2.33 (8.06)***	2.17 (7.73)***	1.43 (1.87)*
EPCA	4.36 (2.45)**	16.99 (8.49)***	4.01 (2.66)***	0.26 (0.26)
Acting OIRA administrator	−1.09 (1.95)*	−1.33 (2.34)**	−1.36 (1.81)*	−1.42 (2.79)***
Effects exceed $1 billion	2.05 (2.55)**	2.08 (3.44)***	1.84 (2.52)**	2.04 (3.01)***
Year 2010	−1.69 (2.61)***	−1.74 (2.94)***	−1.67 (1.78)*	−1.51 (2.60)***
Year 2011	−1.73 (1.57)	−1.79 (2.25)**	−1.71 (1.21)	−1.75 (1.76)*
Year 2012	−0.56 (0.59)	−0.43 (0.72)	0.08 (0.11)	−0.55 (0.47)
Year 2013	−0.61 (0.56)	−0.76 (0.87)	−0.58 (0.52)	−0.94 (0.92)
Treasury	−3.17 (3.29)***		−2.16 (2.73)***	
EPA	−0.78 (1.50)		−0.74 (1.36)	
DOL	−0.27 (0.70)		−0.34 (0.68)	
DHS	−0.18 (0.37)		−0.75 (1.74)	
DOC	−0.78 (0.60)		−0.17 (0.13)	
DOJ	−1.35 (2.10)**		−1.04 (1.87)*	
DOI	−0.54 (0.93)		−0.02 (0.03)	

continued on next page

	Ordered Logit†	Ordered Logit BUC Fixed Effects	OLS Fixed Effects†	Ordered Logit†
DOE	−2.49 (2.18)**		−2.22 (2.14)**	
HHS	−0.23 (0.43)		−0.29 (0.44)	
HUD	2.23 (3.36)***		2.01 (3.52)***	
OPM	−5.54 (3.52)***		−4.47 (3.91)***	
USDA	0.18 (0.26)		−0.65 (0.82)	
GSA	−0.97 (0.81)		−0.98 (0.67)	
Joint EPA/DOT	−4.06 (5.00)***		−3.70 (4.78)***	
Civil rights				0.44 (0.44)
Environment				1.70 (2.80)***
Financial				1.10 (1.11)
Health care				−0.94 (0.70)
Safety				0.43 (1.36)
Security				−0.35 (0.52)
Constant			12.13 (21.47)***	
R^2 or pseudo-R^2	0.18	0.29	0.58	0.16

Statistical significance: *10 percent, **5 percent, ***1 percent.
† Robust standard errors are clustered by agency.

Note: Agency coefficients are not reported for the BUC fixed-effects estimator because it does not produce agency coefficients. Absolute values of *z*- or *t*-statistics are given in parentheses. BUC = blow up and cluster; OLS = ordinary least squares; NAAQS = National Ambient Air Quality Standards; EPCA = Energy Policy and Conservation Act; OIRA = Office of Information and Regulatory Affairs; Treasury = Department of the Treasury; EPA = Environmental Protection Agency; DOL = Department of Labor; DHS = Department of Homeland Security; DOC = Department of Commerce; DOJ = Department of Justice; DOI = Department of the Interior; DOE = Department of Energy; HHS = Department of Health and Human Services; HUD = Department of Housing and Urban Development; OPM = Office of Personnel Management; USDA = US Department of Agriculture; GSA = General Services Administration; EPA = Environmental Protection Agency; DOT = Department of Transportation.

The first column of table 4 shows the ordered logit regression that includes agency-specific dummy variables. The omitted agency dummy variable is DOT. Ordered logit with fixed-effects dummy variables may not yield a consistent estimator when the number of observations in each group is small (Chamberlain 1980). Baetschmann, Staub, and Winkelmann (2015) develop a fixed-effects ordered logit estimator that is consistent, reasonably efficient, and remains unbiased for small sample sizes, which they call "blow up and cluster" (BUC). The second column shows the results using their estimator.[12] The coefficients generally have the same signs and statistical significance, except that *Presidential priority* becomes insignificant and *Public comments*, *Public comments*^{2}, and *Year 2011* become significant. The BUC estimator dropped four departments from the sample, and thus it is not clear whether these differences result from the estimation method or the altered sample. The rest of the results are consistent with those shown in the first column.

The third column contains an ordinary least squares (OLS) regression with agency-specific fixed effects, again using DOT as the omitted category. A potential advantage of OLS is that the linear regression model using group dummy variables is a consistent estimator (Chamberlain 1980, 225). A potential disadvantage is that OLS can yield biased coefficient estimates when the dependent variable is ordinal rather than cardinal (Baetschmann, Staub, and Winkelmann 2015, 702). Figure 10 suggests that a cardinal interpretation of the analysis scores might be plausible. Scores range from 2 to 18 points, and the number of regulations with each score is somewhat dispersed rather than clustered around a few values. The OLS regression yields results very similar to the preceding ordered logit regressions.

[12] No agency dummy variable coefficients are reported for the Baetschmann, Staub, and Winkelmann (2015) estimator because the method does not produce coefficients for the fixed-effects variables.

Finally, the fourth column of table 4 presents an ordered logit regression that omits the agency-specific variables and instead controls for the type of regulation. This estimator produces results very similar to the fixed-effects models. It is also useful for evaluating the potential effects of the type of regulation, which is highly correlated with the agency-specific fixed effects (as will be seen).

Table 5 shows regression results for the four separate criteria that make up the analysis score: problem, alternatives, benefits, and costs. Because these scores can only range from 0 to 5, with few scoring 0 or 5, ordered logit is clearly the more appropriate estimator. All use the ordered logit BUC fixed-effects estimator, because several of the ordered logit regressions with agency dummies either failed to converge or had questionable standard errors.

The first two columns of table 6 present regression results for the two different scores that evaluate the extent to which an agency explained how it used the analysis in its decisions. The third column uses the regulation's retrospective analysis score as the dependent variable. The regression includes one additional explanatory variable—*Revision required*—to test whether a legislative requirement that the agency revisit the regulation is associated with more extensive provisions for retrospective analysis. The fourth column uses the openness score as the dependent variable. Because scoring for retrospective analysis and openness was discontinued after 2012, the regressions in the last two columns include only 108 regulations.

Table 5. Four Main Elements of Regulatory Impact Analysis for 130 Prescriptive Regulations

	Problem	Alternatives	Benefits	Costs
Obama administration	−2.25 (1.28)	−0.32 (0.25)	−0.78 (0.81)	−0.57 (0.39)
Presidential priority	−0.19 (0.20)	1.50 (3.87)***	0.80 (2.25)**	0.01 (0.02)
Agency policy preference	−0.32 (0.84)	−0.08 (0.39)	−0.83 (1.62)*	0.09 (0.23)
Bush post–June 1 midnight regulation	−7.07 (3.95)***	−0.02 (0.02)	−3.02 (1.27)	−1.22 (0.76)
Bush pre–June 1 midnight regulation	1.11 (0.96)	−3.93 (2.98)***	−2.28 (2.82)***	−2.23 (2.22)**
Bush post–June 1 leftover	−2.72 (2.20)**	−2.21 (2.74)***	−1.33 (1.43)	−0.39 (0.36)
Bush pre–June 1 leftover	−1.31 (0.99)	−1.93 (1.14)	13.31 (14.25)***	15.11 (18.77)***
Obama post–June 1 potential midnight	−3.05 (2.61)***	−0.38 (0.24)	−0.32 (0.22)	−1.27 (1.12)
Obama pre–June 1 potential midnight	−1.68 (2.47)**	0.62 (0.85)	−0.14 (0.16)	−0.52 (0.97)
Public comments	−0.00004 (1.47)	0.00004 (2.67)***	0.00008 (4.40)***	−0.00002 (0.66)
Public comments^2	1.51e-10 (1.24)	−1.58e-10 (2.61)***	−3.18e-10 (4.40)***	5.38e-11 (0.48)
Petition	1.02 (1.88)*	0.21 (0.23)	0.62 (0.70)	0.18 (0.19)
Statutory deadline	−0.48 (0.84)	−0.73 (1.19)	0.03 (0.03)	−0.08 (0.07)
Judicial deadline	0.18 (0.16)	0.48 (0.87)	1.44 (2.00)**	0.08 (0.13)
Regulation required	−0.15 (0.22)	0.43 (1.13)	−0.37 (1.01)	−0.52 (0.64)
Prescribed form	0.32 (0.39)	−0.51 (1.35)	0.85 (1.29)	1.02 (2.59)***
Prescribed stringency	0.85 (2.86)***	−0.68 (1.08)	0.08 (0.18)	−0.87 (1.62)
Prescribed coverage	0.45 (0.82)	−0.32 (1.00)	0.56 (1.52)	0.44 (0.74)
NAAQS	3.69 (11.50)***	1.24 (4.54)***	1.96 (6.05)***	−0.92 (1.97)**
EPCA	−1.88 (1.76)*	18.82 (9.61)***	14.18 (8.32)***	18.35 (9.85)***
Acting OIRA administrator	−0.58 (1.46)	−2.32 (3.00)***	−1.30 (2.02)**	−0.79 (1.07)
Effects exceed $1 billion	2.28 (3.86)***	1.06 (1.00)	1.75 (2.32)**	1.10 (2.01)**
Year 2010	−1.03 (1.66)*	−1.93 (3.05)***	−0.75 (1.66)*	−1.85 (1.75)*
Year 2011	−0.86 (0.74)	−3.14 (4.03)***	−0.92 (1.30)	−0.95 (0.91)
Year 2012	2.21 (1.79)*	−2.90 (2.66)***	0.12 (0.13)	−0.56 (0.43)
Year 2013	1.27 (1.13)	−1.40 (1.61)	−0.84 (1.23)	−0.84 (0.86)
Pseudo-R^2	.37	.30	.24	.25

Statistical significance: *10 percent, **5 percent, ***1 percent.

Note: All regressions are ordered logit BUC fixed effects. Agency coefficients are not reported for the BUC fixed-effects estimator because it does not produce agency coefficients. Absolute values of *z*-statistics are given in parentheses. NAAQS = National Ambient Air Quality Standards; EPCA = Energy Policy and Conservation Act; OIRA = Office of Information and Regulatory Affairs; BUC = blow up and cluster.

Table 6. Use, Retrospective Analysis, and Openness Scores for Prescriptive Regulations

	Any use claimed	Cognizance of net benefits	Retrospective analysis	Openness
Obama administration	1.29 (1.12)	−17.37 (9.18)***	−1.24 (0.79)	0.37 (0.43)
Presidential priority	3.72 (6.71)***	0.08 (1.05)	0.53 (0.35)	−0.18 (0.29)
Agency policy preference	−0.72 (4.48)***	0.04 (0.12)	−1.41 (2.82)***	−1.09 (2.82)***
Bush post–June 1 midnight regulation	0.85 (0.77)	−17.46 (6.94)***	−1.13 (0.71)	−4.60 (3.79)***
Bush pre–June 1 midnight regulation	−1.53 (2.19)**	−18.18 (12.64)***	−0.91 (0.77)	−2.19 (2.06)**
Bush post–June 1 leftover	1.37 (1.10)	−17.83 (9.33)***	−1.23 (1.06)	−4.11 (3.81)***
Bush pre–June 1 leftover	3.45 (3.46)***	13.79 (8.69)***	−4.56 (2.53)**	−1.30 (0.68)
Obama post–June 1 potential midnight	1.11 (0.41)	−0.86 (0.53)	2.43 (1.39)	−2.12 (1.99)**
Obama pre–June 1 potential midnight	1.14 (0.97)	1.13 (2.10)**	0.87 (1.60)	0.35 (0.50)
Public comments	0.00007 (2.54)**	0.00003 (1.59)	0.0002 (3.54)***	0.00008 (1.73)*
Public comments^2	−2.56e-10 (2.28)**	−9.47e-11 (1.65)*	−6.67e-10 (3.75)***	−2.26e-10 (1.20)
Petition	0.23 (0.26)	−1.17 (0.91)	−0.26 (0.26)	1.00 (0.97)
Statutory deadline	1.33 (2.91)***	0.27 (0.34)	−1.69 (1.77)*	0.06 (0.06)
Judicial deadline	−0.90 (1.13)	−0.21 (0.36)	−1.36 (3.53)***	0.23 (0.51)
Regulation required	−1.05 (1.89)*	−0.86 (3.84)***	2.99 (4.44)***	0.82 (0.96)
Prescribed form	0.98 (1.03)	−0.04 (0.08)	−1.43 (2.90)***	−0.60 (1.22)
Prescribed stringency	−0.50 (0.65)	−0.66 (1.95)*	−0.10 (0.09)	−1.40 (2.06)**
Prescribed coverage	−0.15 (0.30)	0.73 (2.64)***	−0.69 (0.82)	0.86 (1.29)
Regulatory review required			1.72 (3.39)***	
NAAQS	−2.61 (5.26)***	−0.49 (1.64)	3.62 (8.96)***	−2.80 (4.97)***
EPCA	19.40 (12.28)***	23.26 (13.26)***		
Acting OIRA administrator	−1.48 (3.15)***	−1.49 (2.16)**	−0.03 (0.04)	−0.88 (2.32)**
Effects exceed $1 billion	1.58 (1.73)*	1.14 (1.07)	−0.24 (0.41)	0.88 (1.46)
Year 2010	−1.39 (2.51)**	−1.10 (0.96)	−2.68 (5.49)***	−2.60 (2.37)**
Year 2011	−2.35 (3.01)***	−1.62 (1.18)	−2.58 (4.73)***	−2.82 (3.87)***
Year 2012	−1.80 (1.09)	−1.66 (1.09)	−1.96 (1.27)	−1.75 (1.77)*
Year 2013	0.18 (0.28)	−1.50 (1.28)		
Pseudo-R^2	0.35	0.28	0.48	0.40
Number of regulations	130	130	108	108

Statistical significance: *10 percent, **5 percent, ***1 percent.

Note: All regressions are ordered logit BUC fixed effects. Agency coefficients are not reported for the BUC fixed-effects estimator because it does not produce agency coefficients. Absolute values of *z*-statistics are given in parentheses. NAAQS = National Ambient Air Quality; EPCA = Energy Policy and Conservation Act; OIRA = Office of Information and Regulatory Affairs; BUC = blow up and cluster.

5.1. Political Party Controlling the Presidential Administration

The *Obama* variable is not statistically significant in any of the regressions in tables 4 and 5, nor is it significant in the *Retrospective analysis* or *Openness* regressions in table 6. Coefficients on the year variables imply that the quality of analysis dipped in 2010 and perhaps 2011. This result is consistent with previous research that finds partisan control of the administration has little correlation with the overall quality of RIAs (Hahn and Dudley 2007). It is also consistent with prior research using Report Card data from just 2008–2010, which compared a more equal number of prescriptive regulations from each administration (29 for Bush and 42 for Obama; Ellig, McLaughlin, and Morrall 2013). This evidence indicates that changing the party in control of the White House may have little effect on the quality of analysis of regulations.

However, the *Obama* variable is negative and statistically significant in the second regression in table 6, indicating that regulations proposed during the Obama administration may be less likely to be accompanied by explanations of how net benefits affected decisions.

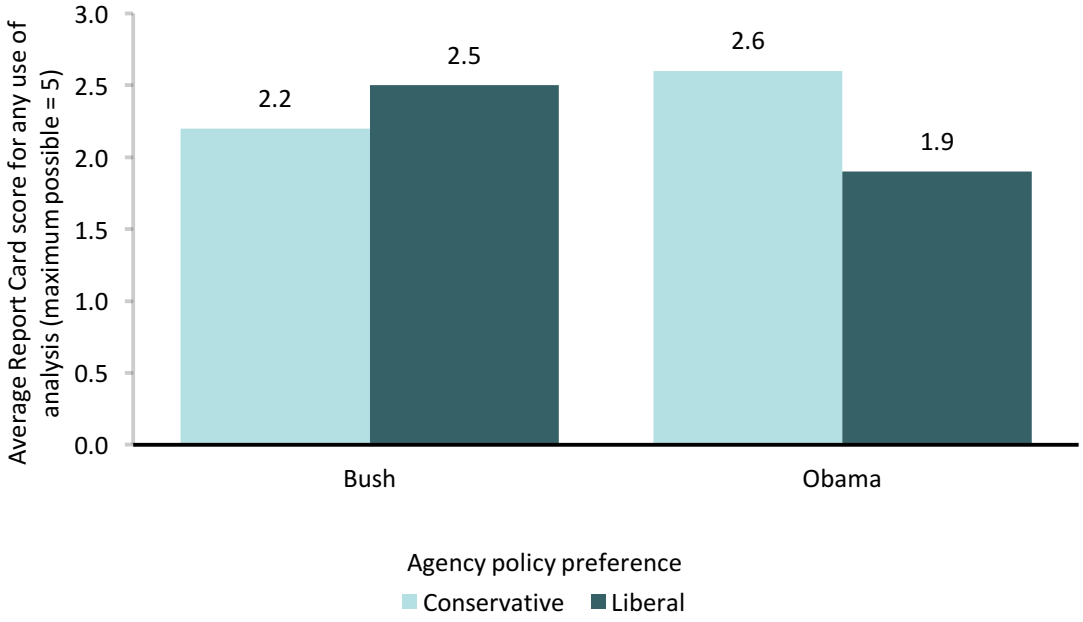
5.2. Administration Policy Priorities

Table 4 suggests that presidential policy priorities might be positively correlated with the overall quality of regulatory analysis, but the statistical significance varies depending on the econometric estimator. Table 5 shows a possible reason for the mixed results. Regulations that implement presidential priorities appear to have a more thorough analysis of alternatives and benefits, but not of the underlying problem or costs. Given these results, it is not clear whether presidential policy priorities are correlated with the overall quality of analysis. Table 6 shows that, for regulations that implement presidential policy priorities, agencies are more likely to claim to have used the analysis.

5.3. Agency Policy Preferences

Agency policy preferences do not appear to be correlated with the quality of RIAs in table 4 or table 5. In table 6, however, this variable is highly statistically significant and negative correlated with *Any use claimed*, *Retrospective analysis*, and *Openness.* The sign is consistent with Posner's (2001) prediction that a presidential administration requires less thorough explanations from regulatory agencies that are more likely to share its political preferences. For *Any use claimed*, the difference is significant enough to show up in the raw data. Figure 16 demonstrates that in the Bush administration the more conservative agencies offered less thorough explanations of how they used the analysis, and the more liberal agencies offered more extensive explanations. The opposite occurred in the Obama administration.

Figure 16. Presidential Administrations Tolerate Less Thorough Explanations of the Use of Analysis from Agencies That Share Their Policy Preferences



Source: Author's calculations, based on Report Card score data available at www.mercatus.org/reportcards and agency policy preference scores calculated by Clinton and Lewis (2008).

5.4. Midnight Regulations

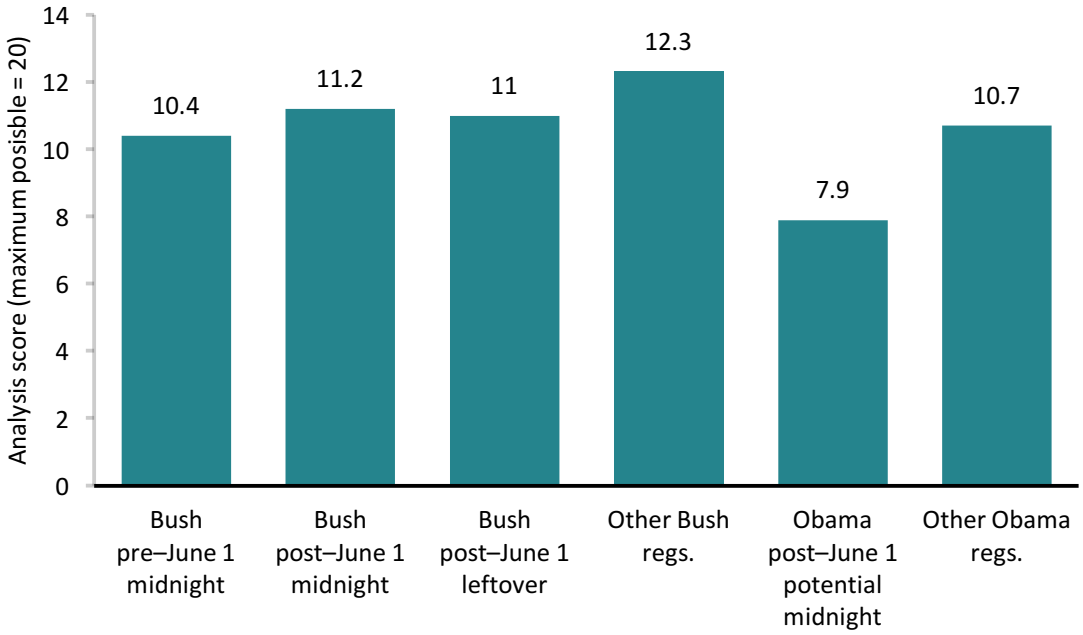
Tables 4 and 5 show that midnight and leftover regulations often tend to have lower-quality analysis. In some cases, though, the result depends on whether the regulation cleared OIRA review before or after June 1 of a presidential election year.

For the G. W. Bush administration, both categories of midnight regulations have lower-quality analysis, regardless of when they cleared OIRA. For the Obama administration, potential midnight regulations that cleared OIRA after June 1 have lower-quality analysis. Potential midnight regulations that cleared OIRA prior to June 1 in the Obama administration have lower-quality analysis only regarding the problem being addressed (table 5). When they are statistically significant, the Obama midnight coefficients are also smaller than the Bush midnight coefficients. These results are consistent with prior research that finds the midnight effect at the end of a president's first term is not as pronounced.

Leftover regulations, meanwhile, have lower-quality analysis only if they cleared OIRA review after June 1. Perhaps these last-minute leftovers were intended to be midnight regulations but did not quite make the deadline. Figure 17 charts the raw analysis scores for categories of midnight and leftover regulations whose scores were significantly lower in table 4's regressions.

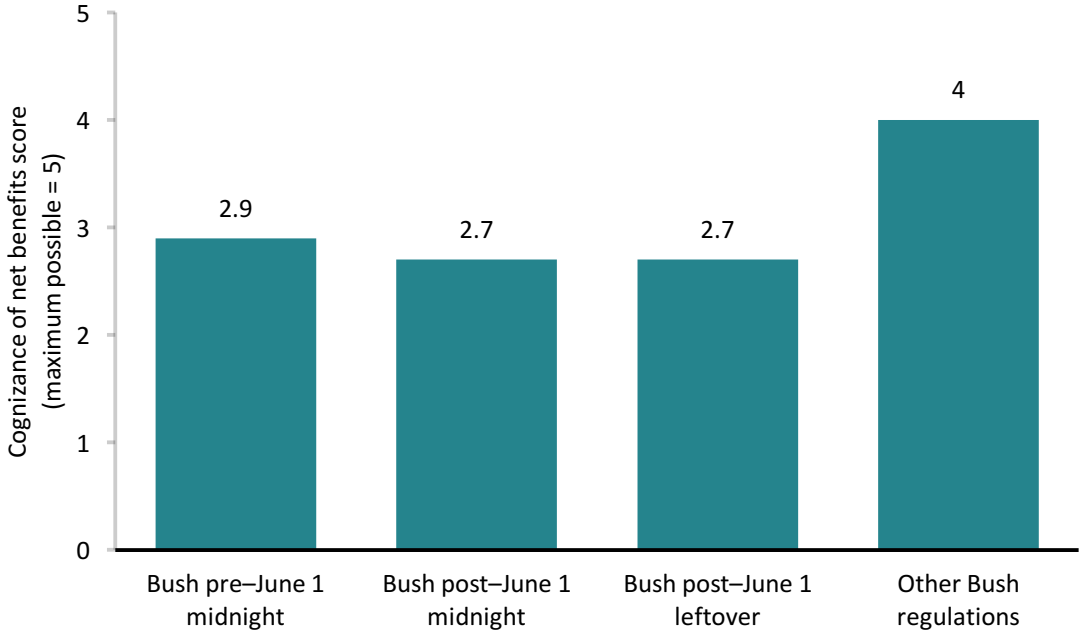
Table 6 shows that the correlations of midnight and leftover regulations with openness are similar to their correlations with quality of analysis. In the Bush administration, midnight and post–June 1 leftover regulations also score significantly lower for *Cognizance of net benefits*. Figure 18 charts the raw scores.

Figure 17. Most Midnight and Leftover Regulations Have Lower Scores for Quality of Analysis Than Other Regulations Do



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 18. Bush Administration's Midnight and Post–June 1 Leftover Regulations Have Less Complete Explanations of the Role Net Benefits Played in Agency Decisions



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

5.5. Political Salience

Table 4 indicates that the *Public comments* variable is correlated with the overall quality of analysis only in the BUC ordered logit regression. Table 5 shows that this correlation occurs primarily with the *Alternatives* and *Benefits* scores. Table 6 reveals a significant correlation between *Public comments* and *Any use claimed* and *Retrospective analysis*. In all these regressions, the squared term is negative, suggesting that some degree of political visibility may prompt greater quality or use of analysis, but highly controversial regulations that generate postcard campaigns have no additional impetus for greater quality or use. *Petition*, on the other hand, is not significant in any of the regressions.

5.6. Deadlines

Tables 4 and 5 show that deadlines do not appear to have any correlation with the quality of regulatory analysis, except that regulations with judicial deadlines are associated with more extensive analysis of benefits. In table 6, *Statutory deadline* is correlated with more extensive explanation of how an agency used the analysis in decisions. Both types of deadlines are associated with less provision for retrospective analysis.

These sparse results may seem paradoxical, but they are consistent with Ellig and Conover's (2014) finding that the only deadlines associated with lower-quality analysis are the very short legislative deadlines that accompany interim final rules. They are also consistent with a recent study that finds regulatory agencies fail to meet about half of statutory deadlines (Atherley 2015). If statutory deadlines are not really binding, they should not affect the quality of analysis.

5.7. Statutory Constraints on Authority

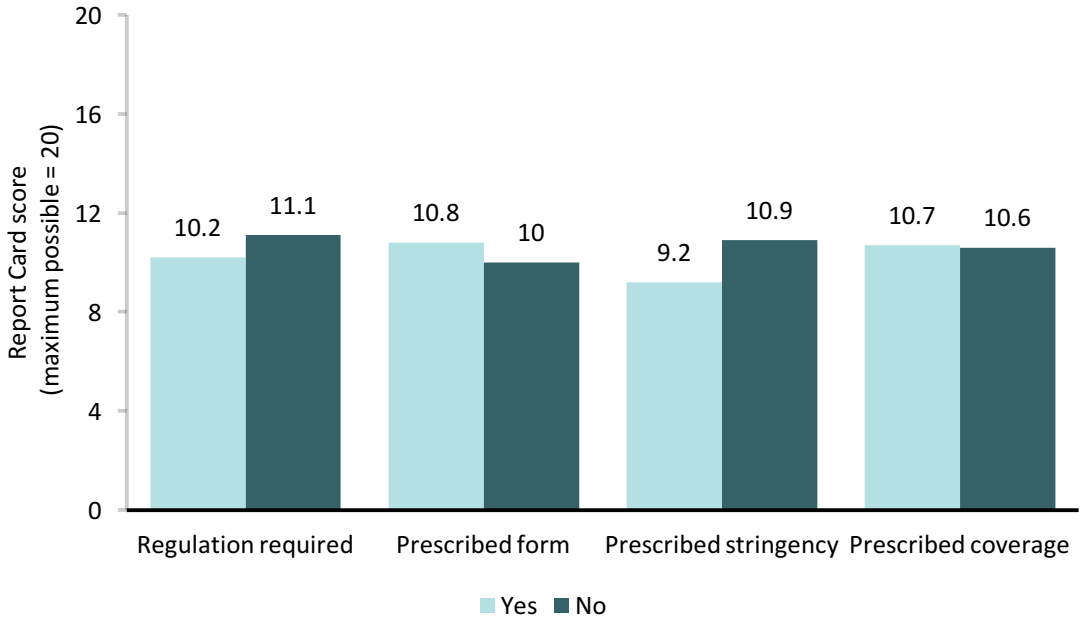
The correlation of statutory constraints on agency authority with the quality and use of analysis varies considerably depending on the particular constraint.

Three of the four general types of statutory constraints—*Regulation required*, *Prescribed form*, and *Prescribed coverage*—are not correlated with the overall quality of regulatory analysis (table 4). In one regression in table 4, *Prescribed stringency* is negative and marginally significant. In table 5, just one of these variables is positively correlated with the quality of problem analysis, and one is correlated with the quality of cost analysis.[13] These results largely conflict with the claim that agency analysts tailor the analysis to address specific margins where the agency has authority to make decisions. In most cases, the quality of analysis does not vary with these statutory constraints. As figure 19 shows, average scores for quality of analysis are similarly low, regardless of how much decision-making authority the statute gave the agency.

These constraints may have slightly more impact on the use of analysis. Table 6 reveals that the agency's explanation of how it used the analysis is less thorough when a new regulation is required by law; the variable is significant around the 6 percent level. Explanation of the role of net benefits in decisions is less thorough when the regulation is required by law or the statute prescribed the stringency of the regulation, but it is more thorough when the statute prescribes who is covered by the regulation (see figure 20).

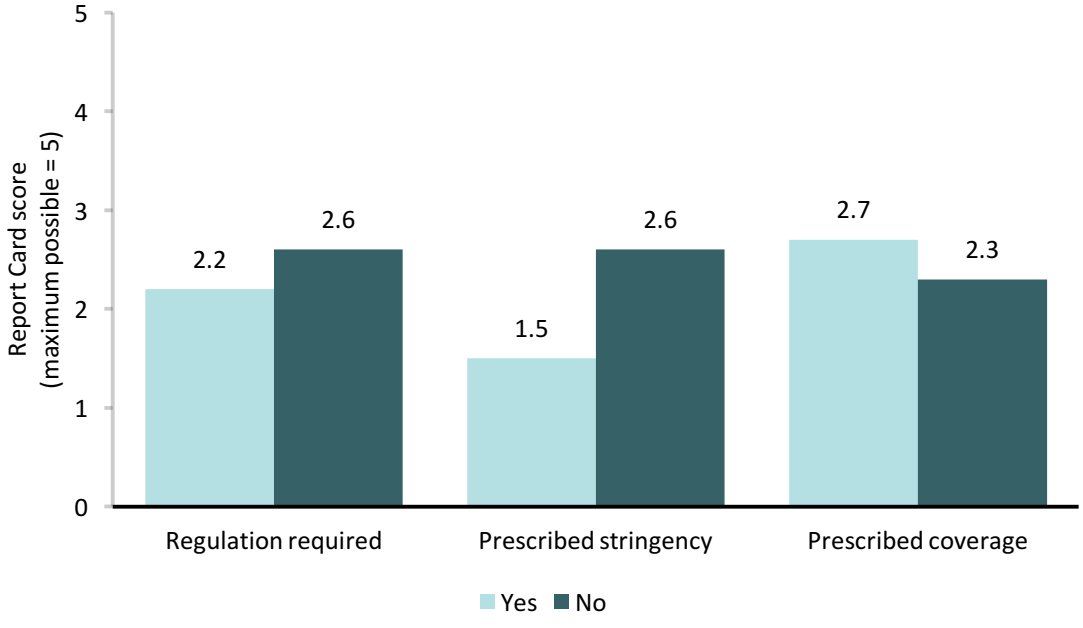
[13] To ensure that these results did not occur because of collinearity, regressions were also run using each of these variables individually; the results did not change.

Figure 19. Average Quality of Analysis Is Low Regardless of Agency's Statutory Authority



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 20. Statutory Authority and Cognizance of Net Benefits

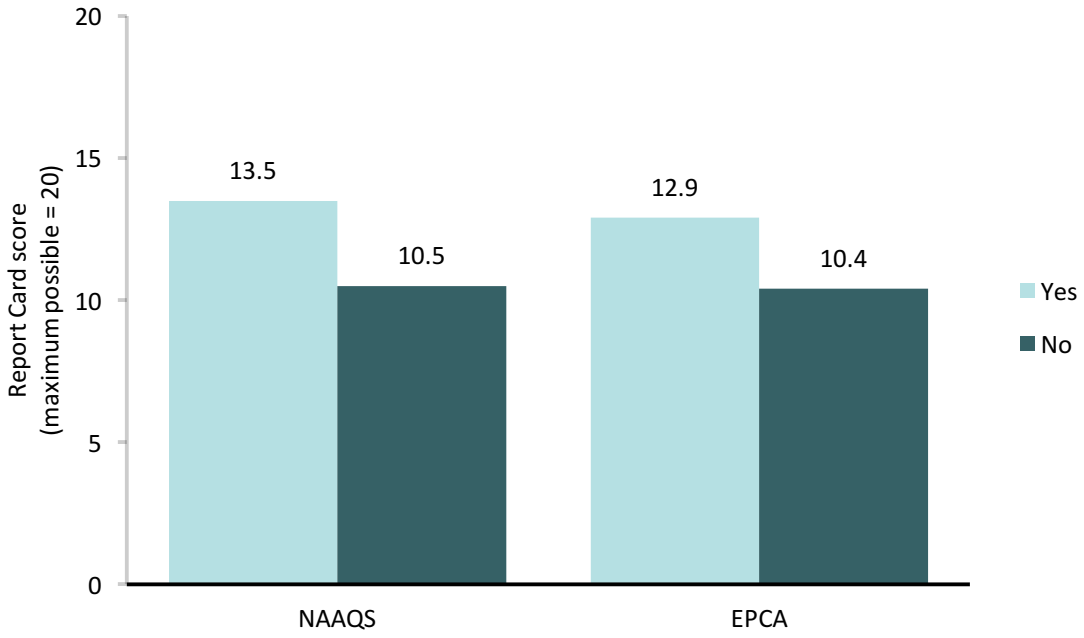


Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Provisions for retrospective analysis are more extensive when the law requires the agency to issue a regulation but are less extensive when the law prescribes the form of the regulation.

The two more specific statutory constraints—NAAQS and EPCA—are strongly correlated with the quality of regulatory analysis, both overall (table 4) and for individual criteria (table 5). Figure 21 demonstrates that NAAQS and EPCA regulations are almost certain to have had above-average quality of analysis.

Figure 21. NAAQS and EPCA Regulations Likely to Have More Thorough Regulatory Impact Analysis

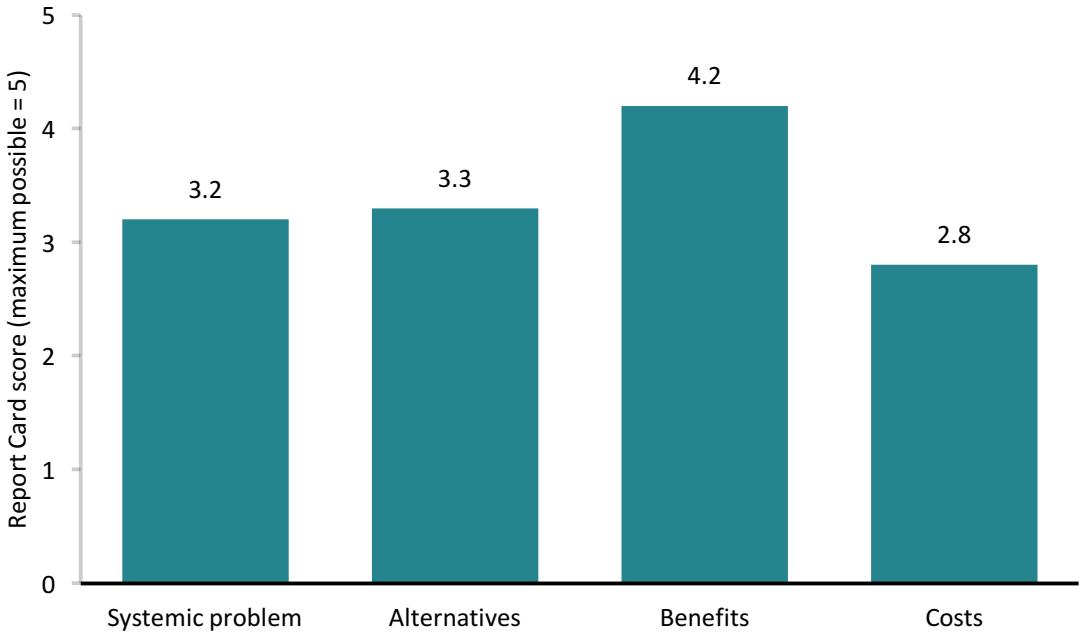


Note: NAAQS = National Ambient Air Quality Standards; EPCA = Energy Policy Conservation Act.
Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

NAAQS regulations are associated with higher-quality analysis on every criterion except costs, where they are associated with lower-quality analysis. This result is not surprising, because the Clean Air Act prohibits the EPA from considering costs when setting air quality standards. As figure 22 shows, NAAQS regulations score lower on cost analysis than on the other three

criteria. NAAQS is also associated with lower openness scores and less thorough explanations of how the EPA used the analysis (table 6).

Figure 22. NAAQS Regulations Score Lowest on Analysis of Costs



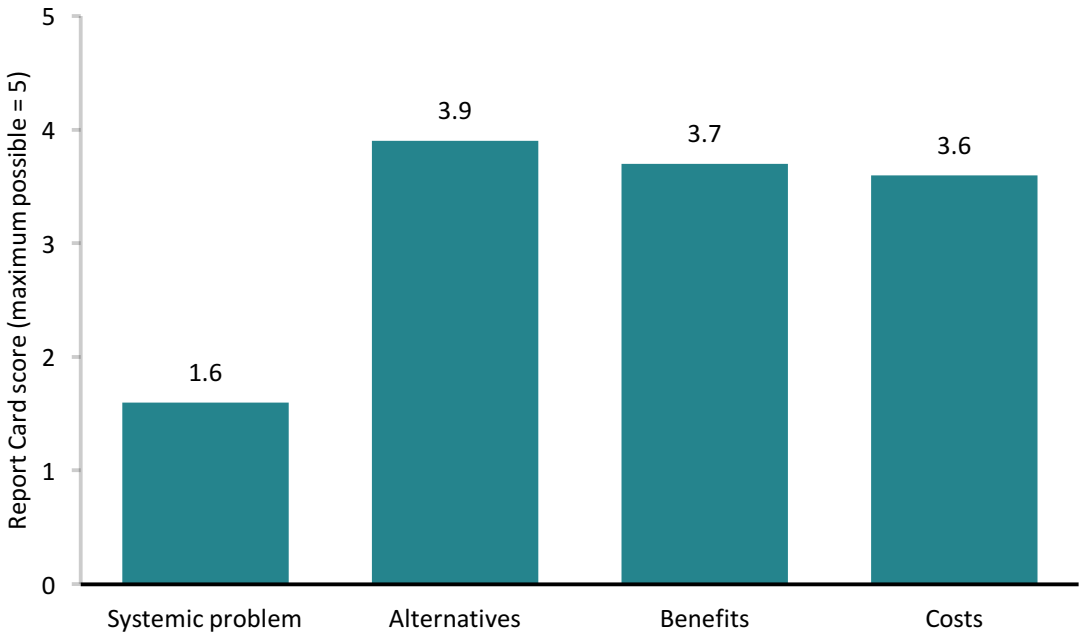
Note: NAAQS = National Ambient Air Quality Standards.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Table 5 reveals that energy efficiency standards issued under the EPCA may have less extensive analysis of the problem, after controlling for other factors, but more extensive analysis of the other three criteria. Figure 23 shows that these regulations score far lower on analysis of the systemic problem than on the other criteria. Table 6 shows that EPCA regulations are more likely to explain how the agency used the analysis and the role of net benefits in regulatory decisions. These results are also not surprising. The EPCA contains language that directs the DOE to assess specific benefits and costs of proposed regulations, which ought to motivate better analysis of benefits and costs and more extensive explanation of how that analysis affected

decisions. However, the DOE has been criticized for failing to demonstrate the existence of a market failure that would motivate the regulations. Instead, the analysis for energy efficiency regulations routinely assumes that consumers *and business firms* irrationally discount the value of future energy savings (Gayer and Viscusi 2013; Mannix and Dudley 2015). These regulations typically receive low scores for analysis of the problem because the irrationality is often assumed to exist with certainty, with little empirical evidence provided.

Figure 23. Energy Efficiency Regulations Score Poorly on Analysis of Problem



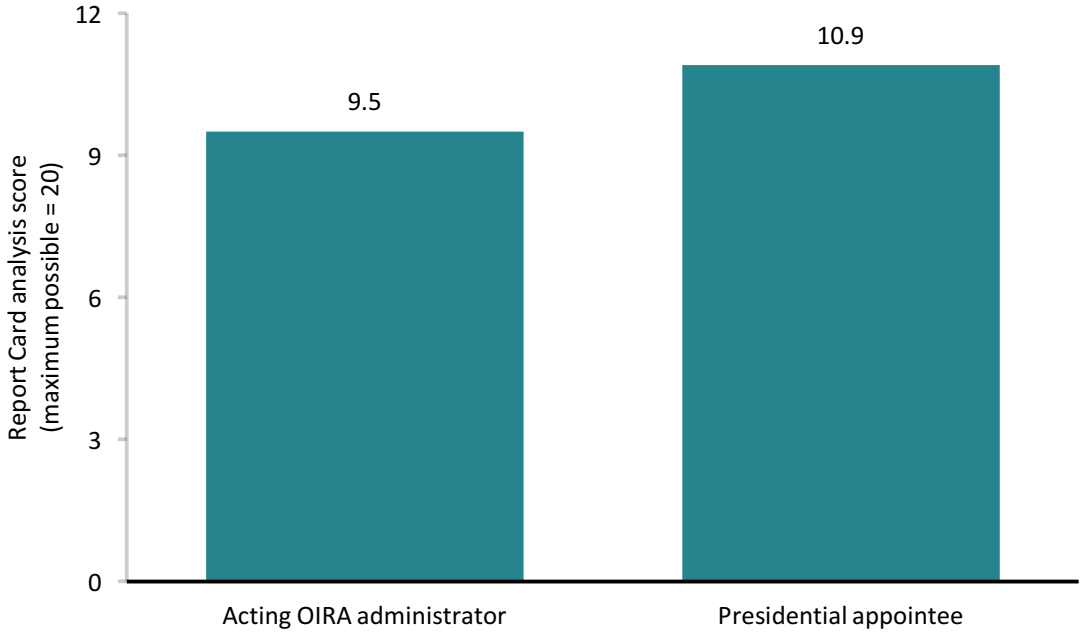
Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

5.8. Relative Influence of OIRA

When OIRA has more influence with the administration, the quality of analysis is more likely to improve. Table 4 shows that the overall quality of analysis is lower when OIRA is headed by an acting administrator, who would have less clout with the administration, rather than a political appointee. The regressions for individual criteria in table 5 reveal that *Acting OIRA*

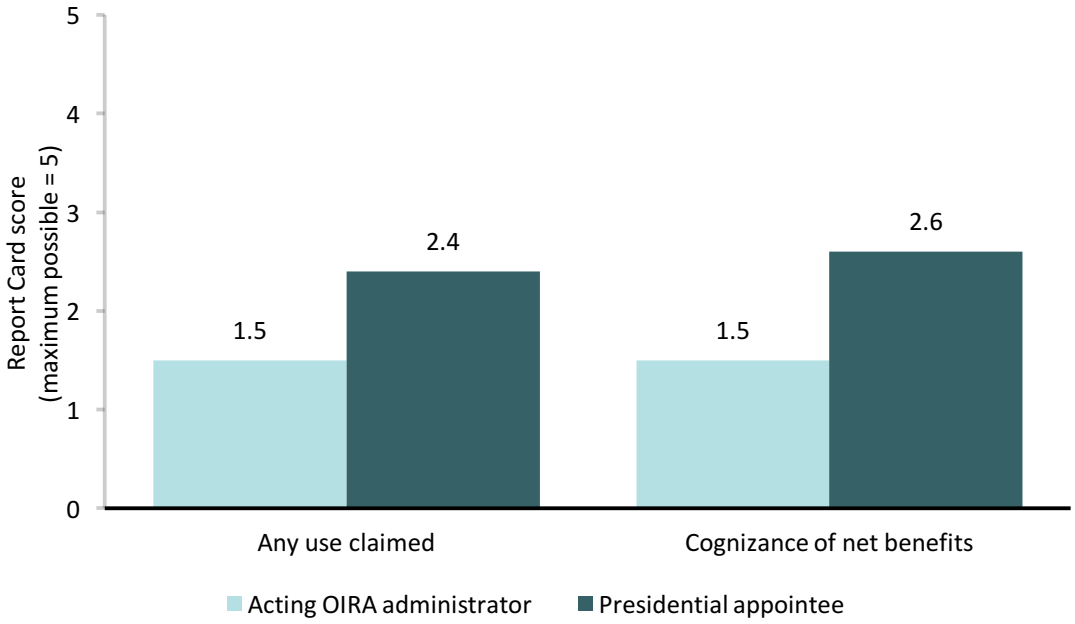
administrator is most strongly correlated with analysis of alternatives and benefits. In table 6, *Acting OIRA administrator* is negatively correlated with *Any use claimed*, *Cognizance of net benefits*, and *Openness.* These results contradict the oft-voiced perception that the primary purpose of OIRA regulatory review is to induce agencies to pay attention to the costs of their proposed regulations. Instead, it appears that OIRA focuses more on ensuring that agencies base their estimates of benefits on more careful analysis, develop alternatives, and explain how their analysis affected decisions. Figures 24 and 25 compare the average scores for quality and use of analysis when OIRA is headed by an acting administrator versus a presidential appointee.

Figure 24. Regulations Reviewed under an Acting OIRA Administrator Have Lower-Quality Analysis



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Figure 25. Regulations Reviewed under Acting OIRA Administrator Have Less Thorough Explanations of How the Agency Used the Analysis



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

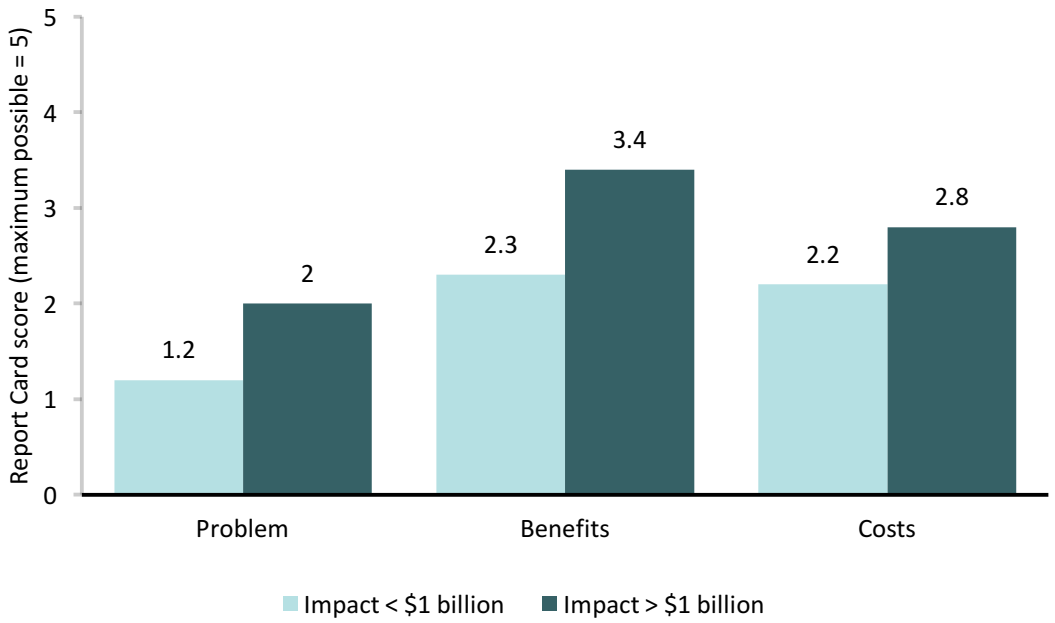
5.9. Economic Impact

Regulations with $1 billion or more of estimated annual benefits or costs receive more thorough analysis. Some of that difference appears to be attributable to OMB *Circular A-4*'s instructions on uncertainty analysis.

The regressions in tables 4 and 5 demonstrate that regulations with an estimated annual impact of $1 billion or more have higher scores for overall quality of analysis and for three of the four quality criteria. The only exception is analysis of alternatives, where the size of the regulation's impact does not seem to be correlated with the score. Analysis of alternatives is also the only quality criterion in the Report Card that does not include a question evaluating the RIA's analysis of uncertainty. The other three criteria—systemic problem, benefits, and costs—each include a question evaluating the RIA's uncertainty analysis. The raw score data in figure

26 suggest that regulations with an estimated annual impact of $1 billion or more have more thorough analysis of uncertainty about the nature and extent of the problem, the size of benefits, and the size of costs. The regressions in table 7 suggest that these differences are statistically significant only for analysis of the problem and perhaps for analysis of costs. Even for high-impact regulations, however, average uncertainty scores fall short of 4 points, the level that indicates reasonably thorough analysis.

Figure 26. Uncertainty Analysis Is Better for High-Impact Regulations



Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Table 7. Scores for Uncertainty Questions for 130 Prescriptive Regulations

	Problem	Benefits	Costs
Obama administration	2.16 (3.35)***	0.35 (0.20)	0.27 (0.20)
Presidential priority	0.71 (1.86)*	1.33 (1.95)*	−1.11 (0.97)
Agency policy preference	0.32 (0.54)	−0.45 (1.28)	−0.15 (0.40)
Bush post–June 1 midnight regulation	0.97 (0.15)	0.06 (0.03)	−1.35 (0.87)
Bush pre–June 1 midnight regulation	1.92 (2.74)***	−1.40 (0.81)	−1.76 (1.46)
Bush post–June 1 leftover	1.92 (3.93)***	0.20 (0.13)	−1.46 (1.00)
Bush pre–June 1 leftover	1.52 (1.12)	18.47 (9.84)***	16.69 (11.27)***
Obama post–June 1 potential midnight	0.97 (0.55)	−0.10 (0.07)	−1.95 (2.51)**
Obama pre–June 1 potential midnight	−0.71 (1.73)*	−1.65 (2.25)**	−0.01 (0.02)
Public comments	−0.0001 (0.27)	0.00003 (1.88)*	−0.00002 (0.49)
Public comments2	−3.99e-11 (0.22)	−1.15e-10 (1.79)*	5.25e-11 (0.37)
Petition	0.25 (0.64)	0.51 (0.59)	−0.77 (1.33)
Statutory deadline	0.17 (0.24)	−0.57 (0.99)	0.15 (0.25)
Judicial deadline	−0.53 (0.88)	−0.59 (0.84)	−1.42 (2.55)***
Regulation required	0.32 (0.66)	0.09 (0.21)	−1.35 (4.11)***
Prescribed form	0.55 (0.78)	2.02 (4.59)***	1.45 (1.46)
Prescribed stringency	0.45 (0.46)	0.25 (0.31)	−0.66 (0.91)
Prescribed coverage	−0.61 (1.32)	−0.04 (0.11)	−0.13 (0.34)
NAAQS	2.44 (10.12)***	0.70 (1.85)*	0.71 (2.11)**
EPCA	−13.83 (12.09)***	0.37 (0.28)	1.90 (1.58)
Acting OIRA administrator	−0.87 (1.29)	−0.47 (0.65)	−1.89 (4.48)***
Effects exceed $1 billion	0.86 (3.40)**	0.59 (0.91)	0.75 (1.69)*
Year 2010	−0.96 (1.65)*	−0.07 (0.11)	−2.86 (3.72)***
Year 2011	−0.59 (0.67)	−0.56 (0.63)	−1.74 (2.79)***
Year 2012	−1.48 (1.75)*	−1.17 (1.50)	−1.39 (2.44)**
Year 2013	−0.31 (0.29)	−1.26 (0.93)	−0.20 (0.25)
Pseudo-R^2	0.18	0.27	0.32

Statistical significance: *10 percent, **5 percent, ***1 percent.

Note: All regressions are ordered logit BUC fixed effects. Agency coefficients are not reported for the BUC fixed-effects estimator because it does not produce agency coefficients. Absolute values of *t*- or *z*-statistics are given in parentheses. NAAQS = National Ambient Air Quality Standards; EPCA = Energy Policy Conservation Act; OIRA = Office of Information and Regulatory Affairs; BUC = blow up and cluster.

5.10. Timing

In most of the regressions, the year dummy variables usually show a temporary dip starting in 2010—about when the new administration would have started proposing many of its own regulatory initiatives. Omitting the *Obama* dummy variable does not changes these results, so the insignificance of the year dummies after 2011 is not a product of collinearity with the administration dummy.

5.11. Agency-Specific Effects

After controlling for other factors, just a few agencies have a quality of analysis that is significantly different from the rest of the agencies. The results reported in prior sections demonstrate that many cross-cutting factors are correlated with the quality and use of regulatory analysis. Therefore, it is likely that effective regulatory reforms should focus on the cross-cutting factors previously identified, rather than on specific agencies.

Agency-specific fixed-effects variables control for unobserved differences between agencies. They identify whether agencies have unique characteristics that influence the quality of analysis and are not accounted for by the other explanatory variables. The ordered logit and OLS fixed-effects regressions in table 4 use DOT as the omitted agency dummy variable because the DOT's mean score of 10.25 was closest to the sample mean of 10.7. Therefore, the other agency coefficients test (approximately) whether those agencies' scores are significantly different from the mean, after controlling for other factors.

The agency coefficient is positive and significant for just one agency: HUD. It is negative and significant for five agencies: Treasury, DOJ, DOE, OPM, and joint EPA/DOT. The DOE coefficient is misleading, however, because all but one of the DOE regulations were energy efficiency regulations issued under the EPCA. EPCA's coefficient is positive, highly significant, and larger in absolute value than the DOE coefficient. The remaining DOE regulation scored just 8 points for quality of analysis, and the DOE coefficient picks up the effect of this low-scoring regulation. When the regressions are run without EPCA, the DOE coefficient becomes positive and significant. Thus, it is not clear whether there is any DOE-specific effect. Given how the regulatory analysis for the DOE's energy efficiency regulations corresponds with the factors that

the statute required the DOE to consider, it is more likely that the statutory instructions rather than agency-specific effects account for the higher scores for EPCA regulations.

Excluding the DOE, the remaining five outlier agencies produced 13 of the 130 regulations in the sample. For the remaining agencies that produced 90 percent of the regulations, differences in the quality of analysis are explained by the other variables in the regressions, not by agency-specific factors.

These statistical findings differ from the impression created by figure 10, which charts agency average scores for quality of analysis without controlling for other factors. That chart suggests that the principal outliers are joint EPA/DOT, HUD, and DOE on the high side and GSA, Treasury, and OPM on the low side. It also identifies DOJ as an agency with scores close to the average. These differences occur because the raw data do not account for other factors outside DOJ's control that could explain why the agency has a high or low score.

A similar analysis of outliers is not feasible for most of the regressions in tables 5 and 6. When using ordered logit with fixed effects to estimate the regressions in table 5, the results for three of the dependent variables are accompanied by a warning that the standard errors are suspect. For *Benefits*, the regression identifies only Treasury, DOJ, and OPM as outliers. Ordered logit fixed-effects regressions would not converge when used to estimate the regressions for *Any use claimed* and *Cognizance of net benefits* in table 6. For *Retrospective analysis*, the method identified DOL, DHS, DOI, HHS, OPM, and GSA as agencies with significantly worse scores and joint EPA/DOT as the only agency with significantly better scores. For *Openness*, eight agencies accounting for the majority of the regulations had significantly better scores.[14]

[14] OLS was not appropriate for these dependent variables because of the small number of possible outcomes.

5.12. Regulation Type

There is some evidence that the quality of analysis varies with the type of regulation. But the evidence clearly contradicts the claim that noneconomic regulations are inherently more difficult to analyze than economic regulations.

Because most agencies specialize in one or two types of regulation, the agency-specific effects potentially provide one possible way to identify whether the type of regulation is correlated with the quality of analysis. The agency-specific effects in table 4 suggest that there may be little systematic difference in the quality of analysis for different types of regulations. For example, of the four agencies that primarily issue environmental regulations, joint EPA/DOT and DOE have significantly worse analysis, but EPA and DOI have a quality of analysis similar to the other agencies. Four agencies—DOT, DOL, HHS, and USDA—issue safety-related regulations, and none have agency-specific effects that make them significantly different from the other agencies. Treasury issues financial regulations and has significantly worse analysis, but DOL also issues financial regulations and does not have significantly worse analysis, and HUD has significantly better analysis. DHS, which primarily proposes security regulations, has analysis that is neither better nor worse than the norm.

Another way to assess the effects of regulation type is to include regulation-type variables in a regression instead of the agency-specific variables (which are highly collinear with regulation type). The fourth column in table 4 presents an ordered logit regression that controls for the type of regulation instead of agency-specific fixed effects. The coefficients indicate that environmental regulations have analysis that is significantly better than other types of regulations. No type of regulation has analysis that is significantly worse than that for economic regulations.

5.13. Motivating a Step-Change Improvement

The results discussed in this section identify numerous factors that may explain why some regulations are accompanied by analysis that is better than others. Recall, however, that the average score for quality of analysis is just 10.7 of 20 possible points. A realistic goal for improvement in the quality of analysis might be a score of 16 of 20 possible points, or 5.3 points above the current mean. This is equivalent to offering somewhat complete analysis on all four criteria.

The OLS fixed-effects coefficients in table 4 provide the simplest indication of the relative magnitude of possible effects of the explanatory variables. The variable associated with the largest improvement is *EPCA*. *EPCA* also has some of the largest positive coefficients in most of the ordered logit BUC fixed-effects regressions in tables 4, 5, and 6, although it is not possible to calculate the variable's marginal effect using these regressions.[15] The EPCA lists specific categories of benefits and costs that the DOE must consider when issuing energy efficiency standards. This result suggests that specific statutory requirements for regulatory analysis are likely to motivate improvement. However, even when *EPCA* = 1, the mean analysis score is only 12.9. Therefore, it is unlikely that the specific language of the law's requirements is ideal, and other reforms in addition to statutory analysis requirements may be necessary to motivate a step change in the quality of regulatory analysis.

The next-largest group of coefficients is that associated with midnight regulations. Midnight regulations are associated with a reduction of 2–3 points in quality of analysis.

[15] The BUC fixed-effects estimator developed by Baetschmann, Staub, and Winkelmann (2015) cannot be used to predict the probabilities of the dependent variable taking on various values because the model does not identify the probabilities (Rainer Winkelmann, private email to author, May 18, 2015).

Although preventing midnight regulations would not increase the average score to 16 points, it would make a noticeable improvement.

6. Conclusion

Score statistics from the Regulatory Report Card clearly demonstrate that the quality, transparency, and use of regulatory analysis fall far short of the standards articulated in EO 12866 and OMB *Circular A-4*. The average score for quality of analysis is just 10.7 out of 20 possible points, or barely 50 percent. Retrospective review earns an average of only 2.8 out of 10 possible points, or 28 percent. The average openness score, a measure of transparency, is 12.8 out of 20 possible points, or 64 percent. The majority of regulations were accompanied by no explanation of how net benefits (benefits minus costs) or any other aspect of the RIA affected regulatory decisions.

These findings have direct relevance for the ongoing debate over the benefits and costs of federal regulations. Scholars and presidential administrations of both parties have claimed that the total benefits of federal regulations exceed their costs (see OMB 2008, 5–11; 2014, 8–14; Shapiro 2015; Katzen 2015; Pierce 2015; Gilbert 2015, 4.) These claims are largely based on the prospective estimates of benefits and costs that agencies provide in their RIAs for economically significant regulations. OMB's 2014 annual report on the benefits and costs of regulation warns that these figures are incomplete. The findings in this paper underscore the need for caution in interpreting these figures. Economically significant prescriptive regulations account for only 0.9 percent of the regulations proposed in 2008–2013. About two-thirds of the economically significant prescriptive regulations evaluated in the Report Card are accompanied by monetized estimates of both benefits and costs. Moreover, the Report Card data demonstrate that many of

these analyses are seriously deficient; hence, many of the benefit and cost figures cannot be regarded as reliable. Thus, it is impossible to conclude whether the total benefits of federal regulations exceed their total costs based on the RIA data utilized in the annual OMB study.

As Arbuckle (2011) suggests, political factors clearly impinge on the quality and use of regulatory analysis. There is mixed evidence that regulations that implement each presidential administration's legacy policy priorities have higher-quality RIAs. Administrations tolerate less transparent analysis and less extensive explanations of how agencies used the analysis from agencies that are more likely to share their policy preferences. Midnight regulations, and potential midnight regulations, have lower-quality analysis in both the G.W. Bush and Obama administrations. Regulations that are more politically visible may have better analysis, more extensive provision for retrospective analysis, and more extensive explanations of how the agency used the analysis in its decisions.

Yet there is no evidence from the Report Card that the overall quality or use of regulatory analysis varies based on whether a given regulation is from the Bush or Obama administration. This is consistent with prior evaluations of RIAs in different administrations (Hahn and Dudley 2007; Ellig, McLaughlin, and Morrall 2013). It is also consistent with the theory that presidents of both parties use regulatory analysis and regulatory review to influence regulatory agencies (DeMuth and Ginsburg 1986; Kagan 2001; Shapiro 2007; Posner 2001).

OIRA review is correlated with the quality and transparency of regulatory analysis and the extent to which agencies explain how it affects their decisions. When OIRA review of a regulation concludes under an acting administrator rather than a political appointee, the regulation has a lower score for quality of analysis, transparency of analysis, and explanation of how the analysis affected the agency's decisions. OMB *Circular A-4* requires that regulations

with an estimated annual economic impact of $1 billion or more have a formal analysis of uncertainty. After controlling for other factors, such regulations do in fact have higher Report Card scores for analysis of uncertainty about the problem to be solved by the regulation and the costs. These results suggest that expanding OIRA's influence or resources could help improve the quality of regulatory analysis.

OIRA, however, has been reviewing agency regulations and analyses for three decades. The low quality of many regulatory analyses suggests that there are limits to what OIRA review can accomplish. Consequently, Congress has considered legislation that would make RIAs a statutory requirement for all agencies, establish minimum standards for analysis, and enforce those standards through judicial review. A comprehensive analysis of such reforms is beyond the scope of this study. Nevertheless, three findings in this study shed some light on the debate over statutory reforms:

1) There is no evidence that civil rights, environmental, financial, security, or safety regulations have lower-quality analysis than economic regulations. In fact, environmental regulations have slightly higher-quality analysis, after controlling for other factors. These results suggest that it is feasible to hold all types of regulations to the same standards for regulatory analysis.
2) General constraints on agency decision-making authority, such as requirements that an agency must issue a new regulation or a statute prescribing the form, stringency, or coverage of a regulation, are rarely correlated with the quality of analysis and are sporadically correlated with the thoroughness of the agency's explanations of how it used the analysis. In other words, agencies rarely tailor an analysis to reflect these constraints.

This finding also suggests that uniform standards for the quality and use of regulatory analysis that are uniformly enforced would be feasible.

3) Statutory constraints that specify the factors an agency must or must not consider are correlated with the quality of analysis in predictable ways. The EPA's NAAQS regulations, which must be based on safety benefits and not costs, have better analyses of benefits but marginally worse analyses of costs than other regulations. The DOE's energy efficiency regulations, which must consider a statutorily prescribed list of benefits and costs, have better analyses of benefits, costs, and alternatives but worse analyses of the underlying problem the regulation seeks to solve. This suggests that agencies can and do comply with statutory standards that specify the topics an RIA must address.

Under the current regulatory process, ignoring analysis is any administration's prerogative. Some argue that this is perfectly proper in a democratic society, but such ignorance has real consequences for real people. When administrations skimp on regulatory analysis, they issue regulations without knowing whether a significant problem exists, the root cause of the problem, alternative solutions that address the root cause, the effectiveness of each alternative in solving the problem, the benefits to society of each alternative, and the cost to society of each alternative. Citizens should question whether ignorance of these factors is acceptable for regulations that affect hundreds of millions of Americans and impose hundreds of millions of dollars in costs.

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Appendix A. Major Factors Considered When Evaluating Each Criterion

Note: Regardless of how they are worded, all questions involve qualitative analysis of how well the regulatory impact analysis (RIA) and the *Federal Register* notice address the issue, rather than "yes/no" answers.

Openness	
1. How easily were the RIA, the proposed rule, and any supplementary materials found online?	How easily can the proposed rule and RIA be found on the agency's website? How easily can the proposed rule and RIA be found on Regulations.gov? Can the proposed rule and RIA be found without contacting the agency for assistance?
2. How verifiable are the data used in the analysis?	Is there evidence that the analysis used data? Does the analysis provide sufficient information for the reader to verify the data? How many of the data are sourced? Does the analysis provide direct access to the data via links, URLs, or provision of data in appendices? If the data are confidential, how well does the analysis assure the reader that the data are valid?
3. How verifiable are the models and assumptions used in the analysis?	Are models and assumptions stated clearly? How well does the analysis justify any models or assumptions used? How easily can the reader verify the accuracy of models and assumptions? Does the analysis provide citations to sources that justify the models or assumptions? Does the analysis demonstrate that its models and assumptions are widely accepted by relevant experts? How reliable are the sources? Are the sources peer reviewed?
4. Was the agency's analysis comprehensible to an informed layperson?	How well can a nonspecialist reader understand the results or conclusions? How well can a nonspecialist reader understand how the analysis reached the results? How well can a specialist reader understand how the analysis reached the results? Are the RIA and relevant portions of the *Federal Register* notice written in plain English (light on technical jargon and acronyms, well organized, grammatically correct, direct language used)?

Analysis[(a)]	
5. How well does the analysis identify the desired outcomes and demonstrate that the regulation will achieve them?	A. How well does the analysis clearly identify ultimate outcomes that affect citizens' quality of life? B. How well does the analysis identify how these outcomes are to be measured? C. Does the analysis provide a coherent and testable theory showing how the regulation will produce the desired outcomes? D. Does the analysis present credible empirical support for the theory? E. Does the analysis adequately assess uncertainty about the outcomes?
6. How well does the analysis identify and demonstrate the existence of a market failure or other systemic problem the regulation is supposed to solve?	A. Does the analysis identify a market failure or other systemic problem? B. Does the analysis outline a coherent and testable theory that explains why the problem (associated with the outcome above) is systemic rather than anecdotal? C. Does the analysis present credible empirical support for the theory? D. Does the analysis adequately assess uncertainty about the existence and size of the problem?
7. How well does the analysis assess the effectiveness of alternative approaches?	A. Does the analysis enumerate other alternatives to address the problem? B. Is the range of alternatives considered narrow or broad? C. Does the analysis evaluate how alternative approaches would affect the amount of the outcome achieved? D. Does the analysis adequately address the baseline—what the state of the world is likely to be in the absence of further federal action?

8. How well does the analysis assess costs and benefits?	A. Does the analysis identify and quantify the incremental costs of all alternatives considered? B. Does the analysis identify all expenditures likely to arise as a result of the regulation? C. Does the analysis identify how the regulation would likely affect the prices of goods and services? D. Does the analysis examine costs that stem from changes in human behavior as consumers and producers respond to the regulation? E. Does the analysis adequately address uncertainty about costs? F. Does the analysis identify the approach that maximizes net benefits? G. Does the analysis identify the cost-effectiveness of each alternative considered? H. Does the analysis identify all parties who bear costs and assess the incidence of costs? I. Does the analysis identify all parties who receive benefits and assess the incidence of benefits?
Use	
9. Does the proposed rule or the RIA present evidence that the agency used the regulatory impact analysis?	Does the proposed rule or the RIA assert that the analysis of outcomes, benefits, the systemic problem, alternatives, or costs affected any decisions? How many aspects of the proposed rule did the analysis affect? How significant are the decisions the analysis affected?
10. Did the agency maximize net benefits or explain why it chose another option?	Did the analysis calculate net benefits of one or more options so that they could be compared? Did the analysis calculate net benefits of all options considered? Did the agency either choose the option that maximized net benefits or explain why it chose another option? How broad a range of alternatives did the agency consider?

11. Does the proposed rule establish measures and goals that can be used to track the regulation's results in the future?	Does the RIA or *Federal Register* notice contain analysis or results that could be used to establish goals and measures to assess the results of the regulation in the future? In the RIA or the *Federal Register* notice, does the agency commit to performing some type of retrospective analysis of the regulation's effects? Does the agency explicitly articulate goals for all major outcomes the rule is supposed to affect? Does the agency establish measures for major outcomes the rule is supposed to affect? Does the agency set targets for measures of major outcomes the rule is supposed to affect?
12. Did the agency indicate what data it will use to assess the regulation's performance in the future and establish provisions for doing so?	Does the RIA or *Federal Register* notice demonstrate that the agency has access to data that could be used to assess some aspects of the regulation's performance in the future? Would comparing actual outcomes to those predicted in the analysis generate a reasonably complete understanding of the regulation's effects? Does the agency suggest it will evaluate future effects of the regulation using data it has access to or commits to gathering? Does the agency explicitly enumerate data it will use to evaluate major outcomes the regulation is supposed to accomplish in the future? Does the analysis demonstrate that the agency understands how to control for other factors that may affect outcomes in the future?

(a) For each analysis criterion, the lettered subquestions each receive a score of 0–5, and these are averaged and rounded to produce the score on the criterion. Score data for each of these subquestions can be downloaded at www.mercatus.org/reportcards.

Appendix B. Scores for All Regulations Evaluated in the Regulatory Report Card Project

Budget regulations are in italics.

Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
Greenhouse Gases from Light-Duty Vehicles	2060-AP58	EPA/DOT	2009	18	5	5	5	15
Nutrition Labeling of Single-Ingredient Products	0583-AC60	USDA	2009	17	2	4	2	14
New Poultry Slaughter Inspection	0583-AD32	USDA	2012	16	5	4	4	13
Effluent Limitations Guidelines and Standards for Construction	2040-AE91	EPA	2008	16	3	1	5	14
Energy Conservation Standards for Residential Furnace Fans	1904-AC22	DOE	2013	15	5	4		
Greenhouse Gas and Fuel Efficiency for Medium-/Heavy-Duty Vehicles	2127-AK74	EPA/DOT	2010	15	4	4	2	13
Transport Rule (CAIR Replacement Rule)	2060-AP50	EPA	2010	15	2	3	5	14
Energy Conservation: Small Electric Motors	1904-AB70	DOE	2009	15	4	5	3	16
Emissions from New Marine Compression-Ignition Engines	2060-AO38	EPA	2009	15	1	2	3	15
Car and Light Truck Corporate Average Fuel Economy 2011–2015	2127-AK29	DOT	2008	15	5	5	2	15
National Ambient Air Quality Standards for Lead	2060-AN83	EPA	2008	15	2	3	7	14
Occupational Exposure to Crystalline Silica	1218-AB70	DOL	2013	14	4	4		
Energy Efficiency Standards for Certain Commercial and Industrial Electric Motors	1904-AC28	DOE	2013	14	5	4		
Energy Efficiency Standards for Microwave Ovens (Standby and Off Mode)	1904-AC07	DOE	2012	14	3	4	2	14
Efficiency Standards for Residential Furnace, Air Conditioners, and Heat Pumps	1904-AC06	DOE	2011	14	3	4	3	15
Cigarette Warning Label Statements	0910-AG41	HHS	2010	14	1	4	1	17
Prohibited Transaction Exemption for Provision of Investment Advice	1210-AB35	DOL	2010	14	2	2	3	11
Living Organisms in Ships' Ballast Water Discharged in US Waters	1625-AA32	DHS	2009	14	3	2	5	15
Lead; Opt-out and Recordkeeping Provisions	2070-AJ55	EPA	2009	14	1	1	1	16
Primary National Ambient Air Quality Standard for Nitrogen Dioxide	2060-AO19	EPA	2009	14	0	1	6	11
Real Estate Settlement Procedures Act	2502-AI61	HUD	2008	14	4	3	3	15

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
US VISIT Biometric Exit System	1601-AA34	DHS	2008	14	1	3	10	9
Effluent Limitations Guidelines and Standards for Steam Electric Power Generating	2040-AF14	EPA	2013	13	3	2		
Energy Efficiency Standards for Metal Halide Lamp Fixtures	1904-AC00	DOE	2013	13	4	4		
Energy Conservation Standards for Commercial Refrigeration Equipment	1904-AC19	DOE	2013	13	4	5		
Energy Conservation Standards for Walk-in Coolers and Walk-in Freezers	1904-AB86	DOE	2013	13	4	4		
Energy Efficiency Standards for Fluorescent Lamp Ballasts	1904-AB50	DOE	2011	13	4	4	3	13
Electronic On-board Recorders and Hours-of-Service Supporting Documents	2126-AB20	DOT	2011	13	5	4	3	11
Reconsideration of the 2008 Ozone NAAQS	2060-AP98	EPA	2010	13	1	3	4	9
Energy Efficiency Standards for Residential Refrigerators and Freezers	1904-AB79	DOE	2010	13	4	5	3	13
Industrial, Commercial, and Institutional Boilers and Process Heaters	2060-AM44	EPA	2010	13	1	2	2	15
Coal Combustion Residuals from Commercial Electric Power Producers	2050-AE81	EPA	2010	13	2	2	2	15
Energy Efficiency Standards for Commercial Clothes Washers	1904-AB93	DOE	2009	13	4	5	3	14
Energy Efficiency Standards for Pool Heaters, etc.	1904-AA90	DOE	2009	13	4	5	3	14
Primary National Ambient Air Quality Standard for Sulfur Dioxide	2060-AO48	EPA	2009	13	0	1	5	12
Class Exemption for Provision of Investment Advice	1210-AB13	DOL	2008	13	3	4	3	15
Congestion Management Rule for LaGuardia Airport	2120-AI70	DOT	2008	13	3	4	6	13
Large Aircraft Security Program	1652-AA53	DHS	2008	13	4	4	2	15
Notice of Class Exemption for Provision of Investment Advice	1210-ZA14	DOL	2008	13	4	4	3	12
Railroad Tank Car Transportation of Hazardous Materials	2130-AB69	DOT	2008	13	1	3	6	10
Permanent Discontinuance/Interruption in Manufacturing of Certain Drug or Biological Products	0910-AG88	HHS	2013	12	2	1		

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
Over-the-Counter Drug Review—Topical Antimicrobial Drug Products	0910-AF69	HHS	2013	12	2	1		
Passenger Car and Light Truck CAFE Standards MYs 2017 and Beyond	2127-AK79	EPA/DOT	2011	12	3	4	4	15
NESHAP for Coal- and Oil-Fired Electric Utility Steam- Generating Units	2060-AP52	EPA	2011	12	1	0	3	16
Hours of Service	2126-AB26	DOT	2010	12	5	4	3	14
Portland Cement NESHAP	2060-AO15	EPA	2009	12	2	3	2	17
Fiduciary Requirements for Disclosure in Participant-Directed Plans	1210-AB07	DOL	2008	12	4	4	3	15
Electronic Prescriptions for Controlled Substances	1117-AA61	DOJ	2008	12	4	3	3	14
Focused Mitigation Strategies to Protect Food against Intentional Adulteration	0910-AG63	HHS	2013	11	1	1		
Energy Efficiency Standards Determination for Distribution Transformers	1904-AC04	DOE	2012	11	3	4	3	14
Electronic Stability Control Systems for Heavy Vehicles	2127-AK97	DOT	2012	11	3	4	2	13
National Ambient Air Quality Standards for Particulate Matter	2060-AO47	EPA	2012	11	1	2	6	13
Oil and Natural Gas Sector—NSP Standards and NESHAP	2060-AP76	EPA	2011	11	2	4	1	12
Revising Underground Storage Tank Regulations	2050-AG46	EPA	2011	11	1	5	2	13
2011–2012 Migratory Game Bird Hunting Regulations	1018-AX34	DOI	2011	11	1	4	4	14
Criteria and Standards for Cooling Water Intake Structures	2040-AE95	EPA	2011	11	1	3	5	13
Migratory Bird Hunting	1018-AX06	DOI	2010	11	1	4	4	14
Federal Motor Vehicle Safety Standard, Rearview Mirrors	2127-AK43	DOT	2010	11	3	4	3	13
Migratory Bird Hunting	1018-AW31	DOI	2009	11	1	4	4	13
Motor Vehicle Safety Standards, Ejection Mitigation	2127-AK23	DOT	2009	11	2	3	3	12
Medical Examination of Aliens	0920-AA26	HHS	2009	11	1	1	0	14
Migratory Bird Hunting	1018-AV62	DOI	2008	11	1	4	4	14
Energy Conservation for Commercial Freezers and Refrigerators	1904-AB59	DOE	2008	11	4	5	3	12

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
State-Specific Inventoried Roadless Area Management	0596-AC74	USDA	2008	11	1	1	3	11
Energy Conservation Standards for Fluorescent Lamps	1904-AA92	DOE	2008	11	4	5	1	6
Hazard Analysis and Risk-Based Preventive Controls for Human Food	0910-AG36	HHS	2013	10	1	1		
Sound for Hybrid and Electric Vehicles	2127-AK93	DOT	2013	10	3	2		
Tier 3 Motor Vehicle Emission and Fuel Standards	2060-AQ86	EPA	2013	10	3	2		
Energy Conservation Standards for Battery Chargers and Power Supplies	1904-AB57	DOE	2012	10	3	3	2	10
Calorie Labeling of Articles of Food in Vending Machines	0910-AG56	HHS	2011	10	1	2	2	14
Nutrition Labeling of Standard Menu Items in Restaurants	0910-AG57	HHS	2011	10	1	2	2	14
Exchange Functions in the Individual Market	0938-AR25	HHS	2011	10	1	1	1	12
NESHAP for Industrial, Commercial, and Institutional Boilers; Reconsideration	2060-AR13	EPA	2011	10	3	1	2	12
NSPS/Emission Guidelines for Sewage Sludge Incinerators	2060-AP90	EPA	2010	10	2	2	2	15
Lead; Clearance and Clearance Testing Requirements for Renovation	2070-AJ57	EPA	2010	10	1	2	1	15
Title V Greenhouse Gas Tailoring Rule	2060-AP86	EPA	2009	10	3	2	7	15
Emission Standards, Reciprocating Internal Combustion Engines	2060-AP36	EPA	2009	10	2	2	4	14
Nondiscrimination in State/Local Government Services	1190-AA46	DOJ	2008	10	5	4	3	14
Nondiscrimination by Public/Commercial Facilities	1190-AA44	DOJ	2008	10	4	4	3	14
Family and Medical Leave Act of 1993	1215-AB35	DOL	2008	10	1	1	3	18
Integrity Management Program for Gas Distribution Pipelines	2137-AE15	DOT	2008	10	2	2	6	7
Standardized Risk-Based Capital Rules (Basel II)	1557-AD07	Treasury	2008	10	2	3	4	9
Oil Shale Management—General	1004-AD90	DOI	2008	10	3	3	2	9
Passenger Screening Using Advanced Imaging Technology	1652-AA67	DHS	2013	9	1	1		
Reduce the Threat of Ship Collisions with North Atlantic Right Whales	0648-BB20	DOC	2013	9	1	1		

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
Administrative Simplification: Standard Unique Identifier for Health Plans	0938-AQ13	HHS	2012	9	1	1	2	14
Migratory Bird Hunting; 2012–2013 Migratory Game Bird Hunting Regulations	1018-AX97	DOI	2012	9	1	2	2	14
Reconsideration of Final National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines	2060-AQ58	EPA	2012	9	1	0	1	13
Unique Device Identification	0910-AG31	HHS	2012	9	1	1	2	10
State-Specific Inventoried Roadless Area Management: Colorado	0596-AC74	USDA	2011	9	1	1	1	7
American Health Benefit Exchanges and Other Provisions of the ACA	0938-AQ67	HHS	2011	9	1	1	1	12
National Standards to Prevent, Detect, and Respond to Prison Rape	1105-AB34	DOJ	2011	9	5	2	2	17
Lowering Miners' Exposure to Coal Mine Dust	1219-AB64	DOL	2010	9	1	2	3	15
Wage Methodology for Temporary Nonagricultural Employment H-2B	1205-AB61	DOL	2010	9	1	0	2	12
Walking Working Surfaces and Personal Fall Protection Systems	1218-AB80	DOL	2010	9	3	4	2	14
Greenhouse Gas Mandatory Reporting Rule	2060-AO79	EPA	2009	9	4	3	5	12
HIPAA Code Sets	*0958-AN25*	*HHS*	*2008*	*9*	*3*	*2*	*3*	*15*
Refuge Alternatives for Underground Coal Mines	1219-AB58	DOL	2008	9	3	2	3	12
Alternative Energy Production on the OCS	1010-AD30	DOI	2008	9	4	3	2	8
HIPAA Electronic Transaction Standards	0938-AM50	HHS	2008	9	1	1	3	12
Growing, Harvesting, Packing, and Holding of Produce for Food Consumption	0910-AG35	HHS	2013	8	0	2		
Migratory Bird Hunting; 2013–2014 Migratory Game Bird Hunting Regulations	1018-AY87	DOI	2013	8	1	2		
ADA Accessibility Guidelines for Passenger Vessels	3014-AA11	DOJ	2013	8	2	0		
Assistance to Foreign Atomic Energy Activities	1994-AA02	DOE	2013	8	2	1		
Hazard Analysis and Risk-Benefit Preventive Controls for Food for Animals	0910-AG10	HHS	2013	8	2	1		
Notice of Benefit and Payment Parameters	0938-AR51	HHS	2012	8	3	1	3	13
Application of the Fair Labor Standards Act to Domestic Service	1235-AA05	DOL	2011	8	1	1	2	12
Secure Handling of Ammonium Nitrate Program	1601-AA52	DHS	2011	8	2	1	0	12

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
Positive Train Control Systems Amendments	2130-AC27	DOT	2011	8	1	2	0	10
Seat Belts on Motorcoaches	2127-AK56	DOT	2010	8	3	3	3	12
Flight and Duty Time Limitations and Rest Requirements	2120-AJ58	DOT	2010	8	2	1	2	12
NESHAP: Mercury Cell Chlor-Alkali Plants, Amendments	2060-AN99	EPA	2010	8	2	2	0	16
End-Stage Renal Disease Prospective Payment System	*0938-AP57*	*HHS*	*2009*	*8*	*3*	*2*	*5*	*13*
Prospective Payment Skilled Nursing Facilities	*0938-AP46*	*HHS*	*2009*	*8*	*4*	*0*	*3*	*11*
Home Health Prospective Payment System	*0938-AP55*	*HHS*	*2009*	*8*	*4*	*0*	*2*	*11*
Hazard Communications Standard	1218-AC20	DOL	2009	8	1	1	2	13
Cranes and Derricks in Construction	1218-AC01	DOL	2008	8	2	2	3	14
Employment Eligibility Verification	9000-AK91	FAR	2008	8	1	1	2	13
Maximum Operating Pressure for Gas Transmission Pipelines	2137-AE25	DOT	2008	8	1	2	0	11
Foreign Supplier Verification Program	0910-AG64	HHS	2013	7	1	0		
Accreditation of Third Parties to Conduct Food Safety Audits	0910-AG66	HHS	2013	7	1	0		
Exchanges Part II—Essential Health Benefits	0938-AR03	HHS	2012	7	1	1	2	11
Patient Protection and Affordable Care Act; Health Insurance Market Rules	0938-AR40	HHS	2012	7	0	0	3	11
Mandatory Inspection of Catfish and Catfish Products	0583-AD36	USDA	2011	7	2	1	1	14
National Organic Program: Sunset Review for Nutrient Vitamins and Minerals	0581-AD17	USDA	2011	7	1	0	1	13
School Improvement Grants	*1810-AB06*	*ED*	*2009*	*7*	*4*	*2*	*7*	*11*
Electronic Health Record Incentive Program	*0938-AP78*	*HHS*	*2009*	*7*	*2*	*1*	*2*	*13*
Renewable Fuels Program	2060-A081	EPA	2009	7	1	1	2	11
Congestion Management for John F. Kennedy Airport and Newark Airport	2120-AJ28	DOT	2008	7	3	4	5	10
Transparency Reports of Physician Ownership of Investment Interests	0938-AR33	HHS	2011	6	2	1	1	13
Credit Risk Retention—Definition of Qualified Residential Mortgage	2501-AD53	Treasury	2011	6	2	1	4	12
Definition of “Fiduciary”	1210-AB32	DOL	2010	6	2	1	0	10
Positive Train Control	2130-AC03	DOT	2009	6	3	3	3	10
Prospective Payment System for Inpatient Rehabilitation Facilities	*0938-AP56*	*HHS*	*2009*	*6*	*3*	*0*	*2*	*15*
Outpatient Prospective Payment	*0938-AP41*	*HHS*	*2009*	*6*	*3*	*0*	*2*	*13*

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
Revisions to Payment Policies under the Physician Fee Schedule	*0938-AP40*	*HHS*	*2009*	*6*	*3*	*1*	*2*	*11*
Special Community Disaster Loans Program	*1660-AA44*	*DHS*	*2009*	*6*	*1*	*1*	*1*	*11*
Changes to the Outpatient Prospective Payment System	*0938-AP17*	*HHS*	*2008*	*6*	*3*	*1*	*3*	*13*
Hospital Inpatient Prospective Payment Systems	*0938-AP15*	*HHS*	*2008*	*6*	*3*	*1*	*3*	*14*
Real-Time System Management Information Program	*2125-AF19*	*DOT*	*2008*	*6*	*1*	*2*	*3*	*11*
Revisions to Medicare Advantage and Prescription Drug Benefits	*0938-AP24*	*HHS*	*2008*	*6*	*3*	*1*	*1*	*8*
Risk-Based Capital Standards: Market Risk	1557-AC99	Treasury	2010	5	1	1	2	7
Hospital Inpatient and Long-Term Care Prospective Payment System	*0938-AP39*	*HHS*	*2009*	*5*	*3*	*0*	*2*	*14*
State Fiscal Stabilization Fund Program	*1810-AB04*	*ED*	*2009*	*5*	*2*	*1*	*2*	*13*
Revisions to the Medicare Advantage Program	*0938-AP77*	*HHS*	*2009*	*5*	*1*	*1*	*3*	*9*
Medicare Program: Revisions to Physician Fee Schedules	*0938-AP18*	*HHS*	*2008*	*5*	*3*	*1*	*3*	*6*
CHAMPUS/TRICARE	*0720-AB22*	*DOD*	*2008*	*5*	*0*	*0*	*1*	*7*
Multistate Exchanges; Implementations for Affordable Care Act Provisions	3206-AM47	OPM	2012	4	0	0	2	9
Race to the Top Fund	*1810-AB07*	*ED*	*2009*	*4*	*2*	*1*	*6*	*9*
Investing in Innovation	*1855-AA06*	*ED*	*2009*	*4*	*1*	*1*	*2*	*11*
Hospice Wage Index for FY 2010	*0938-AP45*	*HHS*	*2009*	*4*	*3*	*0*	*2*	*9*
Credit Assistance for Surface Transportation Projects	*2105-AD70*	*DOT*	*2009*	*4*	*0*	*0*	*1*	*11*
Teacher Education Assistance Grant Program	*1840-AC93*	*ED*	*2008*	*4*	*3*	*1*	*5*	*10*
Abandoned Mine Land Program	*1029-AC56*	*DOI*	*2008*	*4*	*0*	*3*	*4*	*10*
Prospective Payment System for Long-Term Care Hospitals	*0938-AO94*	*HHS*	*2008*	*4*	*3*	*1*	*2*	*9*
State Flexibility for Medicaid Benefit Packages	*0938-AO48*	*HHS*	*2008*	*4*	*1*	*1*	*1*	*9*
Schedule of Fees for Consular Services	*1400-AC41*	*State*	*2008*	*4*	*1*	*0*	*1*	*7*
Housing Trust Fund Program	*2506-AC23*	*HUD*	*2009*	*3*	*4*	*0*	*1*	*10*
Expansion of Enrollment in the Veterans Affairs Health Care System	*2900-AN23*	*VA*	*2009*	*3*	*1*	*0*	*2*	*11*
Children's Health Insurance Program (CHIP)	*0938-AP53*	*HHS*	*2009*	*3*	*3*	*2*	*1*	*8*
General and Nonloan Programmatic Issues	*1840-AC99*	*ED*	*2009*	*3*	*2*	*1*	*1*	*8*
Weatherization Assistance Program	*1904-AB97*	*DOE*	*2009*	*3*	*1*	*0*	*0*	*6*

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Proposed rule	RIN*	Agency	Year	Analysis	Any use	Net benefit	Retrospective	Openness
Medicaid Program Premiums and Cost Sharing	*0938-AO47*	*HHS*	*2008*	*3*	*1*	*1*	*2*	*10*
Proposed Hospice Wage Index for Fiscal Year 2009	*0938-AP14*	*HHS*	*2008*	*3*	*2*	*0*	*2*	*9*
Post–9/11 GI Bill	*2900-AN10*	*VA*	*2008*	*3*	*1*	*1*	*0*	*6*
Modifications to the HIPAA Privacy, Security, and Enforcement Rules	*0991-AB57*	*HHS*	*2010*	*2*	*3*	*0*	*0*	*9*
Loan Guarantees for Projects that Employ Innovative Technologies	*1901-AB27*	*DOE*	*2009*	*2*	*0*	*0*	*0*	*3*
Federal Perkins Loan Program	*1840-AC94*	*ED*	*2008*	*2*	*3*	*1*	*5*	*10*
Prospective Payment System for Skilled Nursing Facilities	*0938-AP11*	*HHS*	*2008*	*2*	*3*	*1*	*1*	*7*
Time and Place for a Hearing before an Administrative Law Judge	*0960-AG61*	*SSA*	*2008*	*1*	*1*	*0*	*2*	*4*

* The Regulatory Identifier Number (RIN) is a unique tracking number assigned to each regulation by the federal government's Regulatory Information Service Center.

Note: EPA = Environmental Protection Agency; DOT = Department of Transportation; USDA = US Department of Agriculture; DOE = Department of Energy; DOL = Department of Labor; HHS = Department of Health and Human Services; DHS = Department of Homeland Security; HUD = Department of Housing and Urban Development; DOJ = Department of Justice; DOI = Department of the Interior; Treasury = Department of the Treasury; DOC = Department of Commerce; FAR = Federal Acquisition Regulation; ED = Department of Education; OPM = Office of Personnel Management; State = Department of State; VA = Department of Veterans Affairs; SSA = Social Security Administration.

Source: Data are from www.mercatus.org/reportcards.

Appendix C. Summary Score Statistics for Agencies Issuing More Than One Prescriptive Regulation

Department of the Treasury

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	3	7.0	2.6	5	10	20
Systemic problem	3	2.0	1.0	1	3	5
Alternatives	3	2.0	1.0	1	3	5
Benefits or other outcomes	3	1.7	0.6	1	2	5
Costs	3	1.3	0.6	1	2	5
Any use of analysis	3	1.7	0.6	1	2	5
Cognizance of net benefits	3	1.7	1.2	1	3	5
Retrospective analysis	3	3.3	1.2	2	4	10
Openness	3	9.3	2.5	7	12	20

Department of Transportation

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	16	10.3	2.6	6	15	20
Systemic problem	16	1.9	1.1	1	4	5
Alternatives	16	2.8	1.1	1	4	5
Benefits or other outcomes	16	3.2	0.8	2	4	5
Costs	16	2.4	0.9	1	4	5
Any use of analysis	16	2.8	1.3	1	5	5
Cognizance of net benefits	6	3.1	1.1	1	5	5
Retrospective analysis	15	3.1	1.9	0	6	10
Openness	15	11.5	2.0	7	15	20

Environmental Protection Agency

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	27	11.7	2.3	7	16	20
Systemic problem	27	2.2	2.0	0	4	5
Alternatives	27	2.9	2.2	0	4	5
Benefits or other outcomes	27	3.6	0.9	1	5	5
Costs	27	3.0	0.8	2	5	5
Any use of analysis	27	1.7	1.0	0	4	5
Cognizance of net benefits	27	2.0	1.1	0	5	5
Retrospective analysis	25	3.3	2.1	0	7	10
Openness	25	13.7	1.9	9	17	20

Department of Labor

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	14	10.1	2.6	6	14	20
Systemic problem	14	2.2	0.9	1	3	5
Alternatives	14	2.4	1.2	1	4	5
Benefits or other outcomes	14	3.2	0.7	2	4	5
Costs	14	2.3	0.6	1	3	5
Any use of analysis	14	2.3	1.2	1	4	5
Cognizance of net benefits	14	2.3	1.4	0	4	5
Retrospective analysis	13	2.5	0.9	0	3	10
Openness	13	13.3	2.1	10	18	20

Department of Homeland Security

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	5	11.6	2.9	8	14	20
Systemic problem	5	2.8	1.1	2	4	5
Alternatives	5	3.0	1.0	2	4	5
Benefits or other outcomes	5	3.2	0.8	2	4	5
Costs	5	2.6	0.9	2	4	5
Any use of analysis	5	2.2	1.3	1	4	5
Cognizance of net benefits	5	2.2	1.3	1	4	5
Retrospective analysis	4	4.3	4.3	0	10	10
Openness	4	12.8	2.9	9	15	20

Department of Justice

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	5	9.8	1.5	8	12	20
Systemic problem	5	1.6	0.9	1	3	5
Alternatives	5	2.8	0.4	2	3	5
Benefits or other outcomes	5	2.8	0.4	2	3	5
Costs	5	2.6	0.5	2	3	5
Any use of analysis	5	4.0	1.2	2	5	5
Cognizance of net benefits	5	2.6	1.7	0	4	5
Retrospective analysis	4	2.8	0.5	2	3	10
Openness	4	14.8	1.5	14	17	20

Department of the Interior

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	8	10.0	1.2	8	11	20
Systemic problem	8	3.1	1.1	1	4	5
Alternatives	8	2.8	0.7	2	4	5
Benefits or other outcomes	8	2.8	0.5	2	3	5
Costs	8	1.4	0.7	1	3	5
Any use of analysis	8	1.6	1.2	1	4	5
Cognizance of net benefits	8	3.3	0.9	2	4	5
Retrospective analysis	7	3.1	1.1	2	4	10
Openness	7	12.3	2.6	8	14	20

Department of Energy

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	17	12.6	1.8	8	15	20
Systemic problem	17	1.6	0.6	1	3	5
Alternatives	17	3.8	0.9	1	5	5
Benefits or other outcomes	17	3.6	0.5	3	4	5
Costs	17	3.5	0.6	2	4	5
Any use of analysis	17	3.8	0.8	2	5	5
Cognizance of net benefits	17	4.2	1.0	1	5	5
Retrospective analysis	11	2.6	0.7	1	3	10
Openness	11	12.8	2.8	6	16	20

Department of Health and Human Services

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	22	8.9	2.5	2	14	20
Systemic problem	22	2.1	0.8	0	3	5
Alternatives	22	1.9	1.1	0	4	5
Benefits or other outcomes	22	2.7	0.6	1	4	5
Costs	22	2.2	0.6	1	3	5
Any use of analysis	22	1.3	0.8	0	3	5
Cognizance of net benefits	22	1.1	0.9	0	4	5
Retrospective analysis	14	1.6	1.0	0	3	10
Openness	14	12.6	2.0	9	17	20

US Department of Agriculture

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	6	11.2	4.4	7	17	20
Systemic problem	6	2.2	1.6	0	4	5
Alternatives	6	3.2	1.2	2	5	5
Benefits or other outcomes	6	3.3	1.0	2	5	5
Costs	6	2.5	1.0	1	4	5
Any use of analysis	6	2.0	1.5	1	5	5
Cognizance of net benefits	6	1.8	1.7	0	4	5
Retrospective analysis	6	2.0	1.3	1	4	10
Openness	6	12.0	2.7	7	14	20

Environmental Protection Agency/Department of Transportation

	Number of regulations	Mean	Standard deviation	Minimum	Maximum	Maximum possible
Analysis	3	15.0	3.0	12	18	20
Systemic problem	3	3.3	1.2	2	4	5
Alternatives	3	3.7	0.6	3	4	5
Benefits or other outcomes	3	4.0	1.0	3	5	5
Costs	3	4.0	1.0	3	5	5
Any use of analysis	3	4.0	1.0	3	5	5
Cognizance of net benefits	3	4.3	0.6	4	5	5
Retrospective analysis	3	3.7	1.5	2	5	10
Openness	3	14.3	1.2	13	15	20

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.

Appendix D. Explanatory Variables with Summary Statistics

Variable	Mean	Standard deviation	Minimum	Maximum
Obama administration	0.78	0.42	0	1
Presidential priority	0.12	0.32	0	1
Agency policy preference	0.37	0.90	−1.43	1.43
Bush post–June 1 midnight regulation	0.05	0.23	0	1
Bush pre–June 1 midnight regulation	0.05	0.21	0	1
Bush post–June 1 leftover regulation	0.07	0.25	0	1
Bush pre–June 1 leftover regulation	0.02	0.15	0	1
Obama post–June 1 potential midnight	0.05	0.23	0	1
Obama pre–June 1 potential midnight	0.20	0.40	0	1
Public comments	7,518	34,208	0	233,677
Petition	0.11	0.31	0	1
Statutory deadline	0.30	0.46	0	1
Judicial deadline	0.19	0.40	0	1
Regulation required	0.49	0.50	0	1
Prescribed form	0.82	0.38	0	1
Prescribed stringency	0.12	0.32	0	1
Prescribed coverage	0.40	0.49	0	1
NAAQS	0.05	0.21	0	1
EPCA	0.12	0.33	0	1
Acting OIRA administrator	0.18	0.38	0	1
Effects exceed $1 billion	0.27	0.45	0	1
Year 2010	0.17	0.38	0	1
Year 2011	0.18	0.38	0	1
Year 2012	0.11	0.31	0	1
Year 2013	0.17	0.38	0	1
Treasury	0.02	0.15	0	1
DOT	0.12	0.33	0	1
EPA	0.21	0.41	0	1
DOL	0.11	0.31	0	1
DHS	0.04	0.19	0	1
DOC	0.01	0.09	0	1
DOJ	0.04	0.19	0	1
DOI	0.06	0.24	0	1
DOE	0.13	0.34	0	1
HHS	0.17	0.38	0	1
HUD	0.01	0.09	0	1
OPM	0.01	0.09	0	1
USDA	0.05	0.21	0	1
GSA	0.01	0.09	0	1
EPA/DOT	0.02	0.15	0	1
Civil rights	0.04	0.19	0	1
Economic	0.06	0.24	0	1
Environment	0.45	0.50	0	1
Financial	0.06	0.24	0	1
Health care	0.12	0.32	0	1
Safety	0.24	0.43	0	1
Security	0.04	0.19	0	1

Note: NAAQS = National Ambient Air Quality Standards; EPCA = Energy Policy and Conservation Act; OIRA = Office of Information and Regulatory Affairs; Treasury = Department of the Treasury; DOT = Department of Transportation; EPA = Environmental Protection Agency; DOL = Department of Labor; DHS = Department of Homeland Security; DOC = Department of Commerce; DOJ = Department of Justice; DOI = Department of the Interior; DOE = Department of Energy; HHS = Department of Health and Human Services; HUD = Department of Housing and Urban Development; OPM = Office of Personnel Management; USDA = US Department of Agriculture; GSA = General Services Administration.

Source: Author's calculations, based on data available at www.mercatus.org/reportcards.