



## Research

# Billion-Dollar Regulations: Trends and Employment Implications

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In the American Action Forum's (AAF) previous study, "[Cumulative Impact of Regulation and Employment](#)," we examined the employment impact of significant regulations that also affect small entities. In this study, AAF examined how the largest regulations (\$1 billion or greater) affect employment. We found the cumulative impact of five or more billion-dollar regulations on an industry reduces employment by more than 54 percent. In addition, average pay for employees still working declines by more than 12 percent after five or more billion-dollar rules. These results are far more striking than our previous study, which found three significant regulations could reduce industry employment by approximately 20 percent.

## BILLION-DOLLAR REGULATIONS

**TWO NEW  
REGULATIONS  
CAN REDUCE  
INDUSTRY  
EMPLOYMENT  
BY 17.5 PERCENT**

**FIVE OR MORE  
BILLION DOLLAR  
REGULATIONS COULD  
REDUCE INDUSTRY  
PAY PER EMPLOYEE  
BY 12 PERCENT**

**21,684  
THE NUMBER OF  
UNEMPLOYED WORKERS  
DUE TO FEDERAL  
REGULATIONS**

AMERICAN ACTION  
FORUM

## METHODOLOGY

AAF replicated the methodology from its previous study. Instead of using “economically significant” rules that also affect small entities, however, we examined the most recent Office of Information and Regulatory Affairs [Draft Report to Congress](#), which listed all 19 rules with an annual cost of \$1 billion or greater. The following table presents these billion-dollar rules.

Rule	Implementation Year	Annual Cost*
Hours of Service for Drivers	2003	\$1.7 billion
Emissions from Nonroad Diesel Engines	2004	\$1.7 billion
Tire Pressure Monitoring Systems	2005	\$2.9 billion
Vehicle Side Impact Occupant Protection	2007	\$1.3 billion
NAAQS for Lead	2008	\$2.9 billion
CAFE for MY 2011	2009	\$2.5 billion
Safety Standards: Roof Crush Protection	2009	\$1.5 billion
CAFE for MYs 2012-2016	2010	\$6.1 billion
Energy Conservation Standards: Heaters	2010	\$1.4 billion
HIPAA Electronic Standards	2010	\$1.9 billion
Sulfur Dioxide Standards	2010	\$2.6 billion
Positive Train Control	2011	\$1.6 billion
Energy Conservation Standards: Freezers	2011	\$1.6 billion
Investment Advice	2011	\$5.5 billion
Safety Standards: Ejection Mitigation	2011	\$1.8 billion

Rule	Implementation Year	Annual Cost*
CAFE for MYs 2017-2025	2012	\$11.4 billion
Mercury Air Toxics Standards	2012	\$10.7 billion
		Total: \$59.3 billion

\*In 2012 Dollars

The above table represents 17 of the 19 billion-dollar rules implemented from 2003 to 2012. AAF excluded the “Clean Air Fine Particle Implementation Rule” and the 2008 Ozone Rule because of data collection issues. For example, we omitted the “Fine Particle” rule because it listed only state and local industries. In adhering to our previous methodology, AAF focused only on the effect of regulation on private-sector employment.

Although the most expensive regulations are the product of EPA rules, the sample spans five Cabinet agencies. EPA has imposed seven billion-dollar regulations, followed by the Department of Transportation (six), the Department of Energy (two), and one each from Health and Human Services and the Department of Labor.

From these 17 regulations, the accompanying regulatory impact analyses listed the following 44 industries as most affected. This sample of industries represents 14.1 percent of total private-sector employment. They are presented below with their North American Industry Classification System (NAICS) codes for reference.

(211) Oil and Gas Extraction	(311) Food Manufacturing	(312) Beverage Product Manufacturing
(313) Textile Mills	(322) Paper Manufacturing	(326) Plastics and Rubber Manufacturing
(327) Nonmetallic Mineral Manufacturing	(332) Fabricated Metal Manufacturing	(492) Couriers and Messengers
(6211) Doctor’s Offices	(6212) Dentist’s Offices	(32511) Petrochemical Manufacturing
(44611) Pharmacies and Drug Stores	(221112) Fossil Fuel Power Generation	(324110) Petroleum Refineries
(331314) Smelting of Aluminum	(331491) Extruding of Nonferrous Metals	(331511) Iron Foundries
(331513) Steel Foundries	(333111) Farm Equipment Manufacturing	(333112) Lawn Equipment Manufacturing
(333120) Construction Machinery Manufacturing	(333131) Mining Machinery Manufacturing	(333132) Oil Field Machinery Manufacturing

(333414) Heating Equipment Manufacturing	(333618) Engine Equipment Manufacturing	(333924) Industrial Truck Machinery Manufacturing
(335222) Household Refrigerator Manufacturing	(335312) Motor Generator Manufacturing	(335911) Storage Battery Manufacturing
(336111) Automobile Manufacturing	(336112) Light Truck Manufacturing	(336340) Brake System Manufacturing
(423110) Automobile Wholesalers	(482111) Line-Haul Railroads	(482112) Short Line Railroads
(484110) General Freight Trucking	(484220) Specialized Local Freight	(484230) Specialized Long-Distance Freight
(523930) Investment Advice	(622110) General Medical Hospitals	(811111) General Automotive Repair
(811112) Automotive Exhaust Repair	( 811198) Other Automotive Repair	

As in “[Cumulative Impact of Regulation and Employment](#),” AAF employed industry-level data from the Bureau of Labor Statistics’ Current Employment Statistics and used average annual employment, average total annual payroll, and average pay per employee in the 44 industries listed for each year from 2002 to 2012. While the previous paper studied all the industries required to comply with the regulations (as listed in the regulatory text), AAF could not use an identical methodology in this study because there were cases where one regulation affected an industry and another regulation affected a specific subsector of that same industry. If we were to include both the industry and its subsector as separate observations, it would skew the analysis because we would essentially count the same industry multiple times.

AAF resolved this issue by consolidating the broader industry regulations into more granular subsectors. Specifically, AAF assumes that all rules that apply to broad industries (shorter NAICS codes) also apply to their subsectors (longer NAICS codes). Thus, for instances in which a broader industry and one of its subsectors were affected by separate regulations, AAF dropped the broader industry from the data set and added its regulation to the subsector. For example, the “Ejection Mitigation” regulation listed “Motor Vehicle Manufacturing” as an affected industry. During AAF’s consolidation, we dropped “Motor Vehicle Manufacturing” and applied this rule to automobile and light truck manufacturing, the more granular subsector.

To examine the cumulative effect of several billion-dollar regulations, this analysis estimates the change in industry employment, total industry payroll, and payroll per employee resulting from multiple significant new regulations. In particular, AAF performed a fixed effects regression to estimate the effect of an industry receiving one, two, three, four, or five or more new billion-dollar regulations on the log of employment, log of total payroll, and log of payroll per employee. To account for macroeconomic forces during the period, such as the loss in employment due to the Great Recession, AAF controlled for year. In addition, to account for changes in prices during that time, AAF controlled for industry chained Consumer Price Index (CPI).

## FINDINGS

AAF found that multiple large business regulations are cumulatively detrimental to industry employment, total industry payroll, and average pay per employee.

## Employment

Table 1: Billion-Dollar Regulations and Employment <sup>†</sup>	
Number of New Regulations	Employment
One	-3.0%
Two	-17.5%*
Three	-25.4%*
Four	-54.4%*
Five or More	-54.7%*
*Significant at the 1% level	
<sup>†</sup> Regression adjusted coefficients using log of employment, fixed effects and controlling for chained CPI and year	

The results in Table 1 reveal that multiple billion-dollar regulations significantly reduce industry employment. While the effect of one new regulation is statistically insignificant, multiple new regulations cumulatively decrease employment. In particular, relative to an industry without new regulations, two new regulations decrease industry employment by 17.5 percent, three decrease it by 25.4 percent, four by 54.4 percent, and five or more by 54.7 percent. To put these estimates in perspective, the average industry employment in this sample in 2012 was 355,185. If the average industry faced two new large regulations in the following years, it would lose 62,157 employees. If it faced five or more new large regulations, it would lose 194,286 jobs. It is important to note that many of the affected industries had steady declines in employment during the studied period. However, controlling for year and using a fixed effects regression still produced statistically significant results.

## Total Payroll

Table 2: Billion-Dollar Regulations and Total Payroll <sup>†</sup>	
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Number of New Regulations	Total Payroll
One	-3.0%
Two	-19.7%*
Three	-25.6%*
Four	-62.2%*
Five or More	-67.1%*
*Significant at the 1% level	
†Regression adjusted coefficients using log of total payroll and fixed effects and controlling for chained CPI and year	

Table 2 reveals that billion-dollar regulations are also cumulatively damaging to total industry payroll. In particular, relative to industries without new regulations, facing two, three, four, or five or more new regulations lowers an industry's payroll by 19.7, 25.6, 62.2, and 67.1 percent respectively (all highly statistically significant). For perspective, the average industry in this sample spent \$20.7 billion on its employees in 2012. If an industry faced five or more new large regulations in the following years, its total payroll would decline by \$13.9 billion.

## Average Pay per Employee

As employment declines in an industry, so does the amount of money that industry generally spends on its employees. Thus, AAF evaluated how regulations cumulatively affect the average pay per employee in an industry. We illustrate the results in Table 3.

Table 3: Billion-Dollar Regulations and Pay per Employee <sup>†</sup>	
Number of New Regulations	Pay Per Employee
One	-0.2%
Two	-2.1%**

Table 3: Billion-Dollar Regulations and Pay per Employee<sup>†</sup>

Three	-0.1%
Four	-7.9%*
Five or More	-12.3%*

\*Significant at the 1% level

\*\*Significant at the 5% level

<sup>†</sup>Regression adjusted coefficients using log of average pay per employee and fixed effects and controlling for chained CPI and year

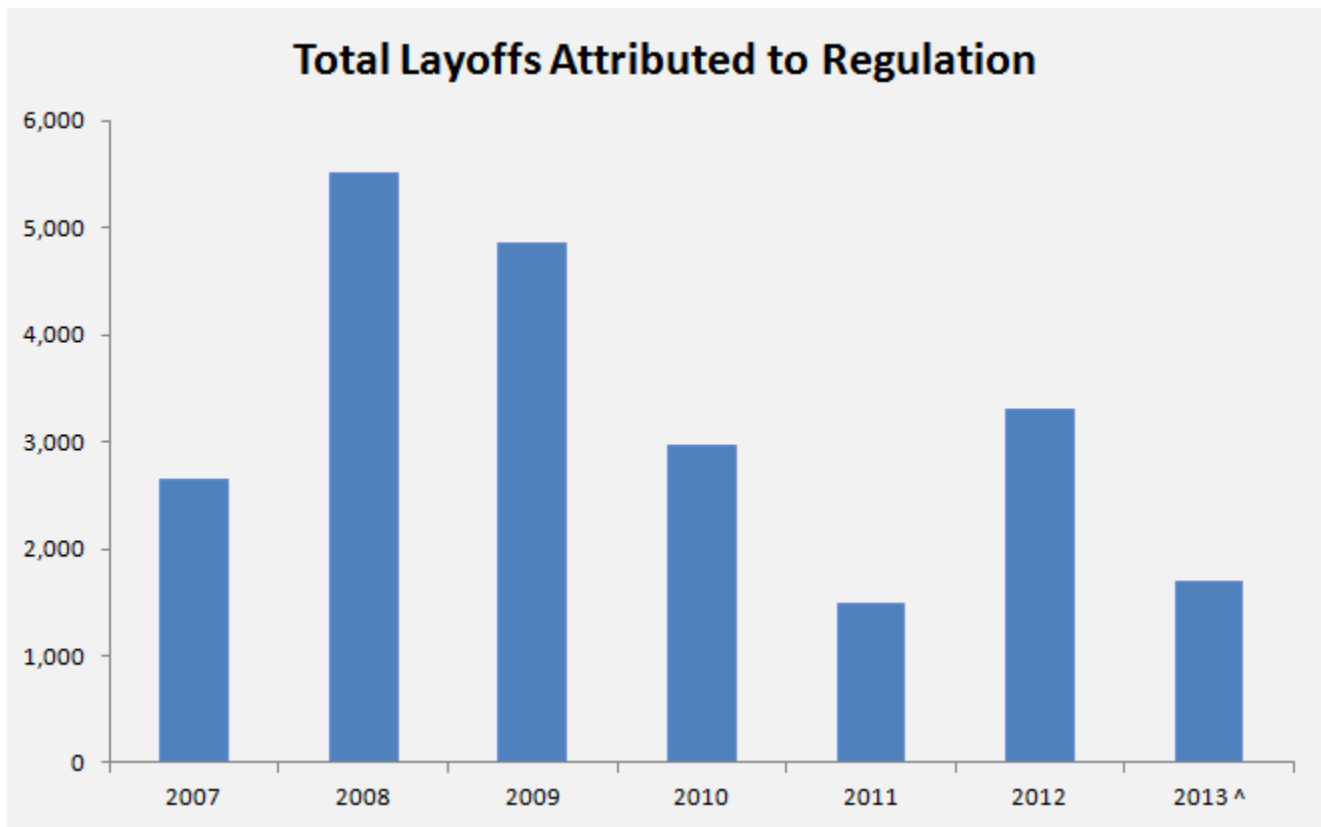
Although the results are mixed in Table 3, the same general pattern emerges as the greater the number of new billion-dollar regulations, the larger the decrease in average employee pay in an industry. Specifically, relative to having no new regulations, industries with two new regulations reduce their per employee compensation by 2.1 percent, those with four new regulations decrease employee compensation by 7.9 percent, and industries with five or more new regulations decrease per employee compensation by 12.3 percent. The industries in this sample paid their employees \$62,930 per year on average in 2012. If they all received five or more new billion-dollar regulations over the next few years, average employee compensation could fall \$7,740 to \$55,190 (in 2012 dollars).

## BROADER TRENDS IN REGULATION AND UNEMPLOYMENT

As the intersection of regulation and employment becomes more transparent, public attention has turned to whether recent economic stagnation is the product of federal rules. The data here are not fully conclusive and attributing the broader economic malaise to regulation is more difficult.

The Worker Adjustment and Retraining Notification (WARN) Act provides some recent data on the cause of private-sector unemployment. WARN requires employers with more than 100 employees to provide public notice of mass layoffs at least 60 days in advance.

The Bureau of Labor Statistics has the listed reasons for mass layoffs [from 1996](#) to present, but BLS only collected “Government Regulations/Intervention” starting in 2007, and those data are partial. In the first quarter of 2013, regulation forced 1,686 employment separations, or roughly 1 percent of the WARN sample. Regulation trumped “Business-Ownership Change” as a reason, but “Business Demand” (62,800) led all reasons. The following chart displays total WARN Act layoffs citing regulation since 2007.



^Data from only the first quarter

There have been 22,435 unemployed workers from mass layoffs attributed to regulation since 2007, with an annual average of 3,458. Given the current labor market, this might not appear significant. However, there are limits to relying on WARN Act notices as proxy for regulation and employment. WARN only applies to “large” employers, mass layoffs, and the data from 2013 are incomplete.

In addition, the data tell us nothing about the potential hires that never resulted because of government regulation. For example, there are at least [two proposed power plants](#) that companies never completed because of recent regulations. Combined, they would have employed more than 4,000 workers.

The hidden nature of regulatory costs can affect business demand in many ways. Regulatory impact analyses concede that new rules will increase the cost of consumer goods, drive up premiums, and occasionally raise energy prices. Taken together, this affects overall demand, but in ways that are difficult to measure. With more than 22,400 direct layoffs, it is clear that regulation plays a role in the labor market.

## CONCLUSION

A 54 percent decline in industry employment after five or more billion-dollar regulations is certainly a striking headline figure. Clearly, this is a significant impact; some might say implausibly large. Further research may be required to hone more specific results, but these data point to an economically meaningful burden that diminishes employment.