

# Year-End Federal Spending and Government Waste: Reforming “Use It or Lose It” Rules

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## ABSTRACT

At the end of every fiscal year, US government agencies spend large sums of their budgets in a potentially wasteful manner. These year-end spending surges are described by the "use it or lose it" phenomenon, which is driven by a fear that leftover resources will prompt future budget cuts. Every year the media documents examples of wasteful year-end spending, but there has been little empirical research on the phenomenon. This paper examines existing literature on the prevalence, consequences, wastefulness, and causes of year-end spending surges. It reviews previous efforts to examine year-end spending and, using publicly available data, analyzes whether the quality of year-end spending is lower than spending at other points during the year. The paper does not find obvious indicators that year-end spending quality is worse than other spending. Future studies may be able to find more definitive evidence, given further data availability or different methodologies.

*JEL* codes: H1, H6

Keywords: year-end spending, federal budget, fraud, waste, abuse

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**F**ederal spending patterns are heavily influenced by incentives that constrain or regulate government processes. “Use it or lose it” rules, for example, seem to incentivize a surge in federal spending at the end of the fiscal year. Budget uncertainty causes agencies to set aside resources until the final weeks of the year, at which point “use it or lose it” rules encourage them to expend the remaining funding in order to avoid returning it to the federal treasury. This spike in spending has been observed across agencies. Anecdotal evidence also suggests that such spending tends to be poorly planned and is therefore more likely to be wasteful. In this paper, we review previous efforts to examine year-end spending and, using publicly available data, perform our own analysis of whether its quality is lower than spending at other points during the year. We do not find obvious indicators of year-end spending quality being worse than other spending. Future studies may be able to find more definitive evidence, given further data availability or different methodologies.

## LITERATURE REVIEW

Relatively few papers in recent years have examined year-end federal spending. Jason Fichtner and Adam Michel studied how the “use it or lose it” phenomenon incentivizes federal agencies to spend more in the final weeks of the federal fiscal year. This attitude stems from the fact that unused funding will expire September 30, so it is often the last chance that agencies have to make use of appropriations for that year. Agency officials fear that returning unused funds may prompt Congress to cut their budgets in the following fiscal year, interpreting the unused funds as being unneeded in the future. Using data from USASpending.gov on overall federal contract spending trends, Fichtner and Michel found noticeable spikes from August to September across numerous executive departments. They recommended a pilot program that would give agencies limited carryover

authority to transfer unused spending into the next fiscal year, as well as a cash reward program for federal employees who identify areas of waste.<sup>1</sup>

The federal government has also tried to better understand the year-end spending process. The Fiscal Year (FY) 2016 National Defense Authorization Act established the Section 809 panel to review and provide recommendations on acquisition reform in the Department of Defense (DOD), with the goal of making DOD's acquisition processes more adaptable and efficient. The panel has noted that disproportionate contract obligations occur within the DOD at the end of the fiscal year. In response, the panel formed research teams to look at key issues related to budgeting; specifically, the Section 809 panel wanted to identify the factors driving DOD budget practices and examine the impact of such practices on project performance. Although volume 1 of the panel's report was released in January 2018, its final report (volume 3) will not be ready until January 2019.<sup>2</sup>

In 2017, the Government Accountability Office (GAO) also released a report on the effect of budget uncertainty on agency spending. Based on reports and testimony from 2009 to 2016, the report singled out political factors such as the use of continuing resolutions, budget sequestration during the fiscal year, and lapses in appropriations (government shutdowns) that create uncertainty for federal officials. Such uncertainties may cause agencies to curtail their spending early in the fiscal year because anticipated resources are not guaranteed. Agencies then delay spending until the end of the year, and the changeability in the federal budget process incentivizes this behavior.<sup>3</sup>

In September 2017, Fichtner, Allen Burman (representing the Section 809 panel), and Heather Krause (Director of Strategic Issues at GAO) presented their findings at a hearing of the Senate Subcommittee on Federal Spending Oversight and Emergency Management. That hearing highlighted congressional desire for increased analysis of the quality of year-end spending. The subcommittee chairman, Senator Rand Paul (R-KY), characterized the hearing in a statement as part of an effort to mitigate “wasteful, end-of-year-spending.”<sup>4</sup> In one exchange that

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1. Jason J. Fichtner and Adam N. Michel, “Curbing the Surge in Year-End Federal Government Spending: Reforming ‘Use It or Lose It’ Rules—2016 Update” (Mercatus Research, Mercatus Center at George Mason University, Arlington, VA, 2016).

2. Section 809 Panel, *Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations, Volume 1 of 3* (Arlington, VA: Section 809 Panel, January 2018).

3. Heather Krause, “Budget Uncertainty and Disruptions Affect Timing of Agency Spending” (Testimony before Senate Subcommittee on Federal Spending Oversight and Emergency Management, US Government Accountability Office, Washington, DC, September 20, 2017).

4. Office of Rand Paul, “Senator Rand Paul Holds Hearing to Mitigate Wasteful, End of the Year Federal Spending,” news release, September 20, 2017, <https://www.paul.senate.gov/news/sen-rand-paul-holds-hearing-mitigate-wasteful-end-year-federal-spending>.

highlighted this concern, ranking member Senator Gary Peters (D-MI) specifically asked whether spending spikes at the DOD at the end of budgetary deadlines corresponded to periods of increased waste.<sup>5</sup> Fichtner noted, “If there are projects that take several months to plan, the ones that take less time are going to naturally be put off until the end.”<sup>6</sup> Projects financed with year-end spending may not be as carefully planned as projects earlier in the year, since, by definition, year-end spending involves using money that is left over in the final weeks of the year. Fichtner emphasized that this trend is not due to incompetence or malice on the part of government employees; rather, the trend persists because of perverse incentives inherent in the budget process.

Congressional and public interest in this topic is further informed by persistent anecdotal evidence suggesting that year-end spending is wasteful. At the September hearing, Senator Paul’s opening statement illustrated such examples: “We have been told of the military hovering aircrafts at the end of runways just to burn off fuel and soldiers sent to the shooting range sometimes for an entire day just to expend ammunition.”<sup>7</sup> Interviews of DOD employees have described “merchants and contractors camped outside contracting offices on September 30 just in case money came through to fund their contracts.”<sup>8</sup> Numerous media reports have characterized federal year-end spending as “shopping sprees.”<sup>9</sup> Such anecdotal evidence is not limited to the United States—other countries with comparable “use it or lose it” incentive structures face similar phenomena. In Canada, for example, where the fiscal year ends in March, end-of-year spending is nicknamed “March Madness,” implying a disorganized and chaotic process.<sup>10</sup>

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5. Gary C. Peters, “Prudent Planning or Wasteful Binge? Another Look at End of the Year Spending” (Statement by Ranking Member of the Subcommittee on Federal Spending Oversight and Emergency Management, Washington, DC, September 20, 2017).

6. Jason J. Fichtner, “Curbing Wasteful Year-End Federal Government Spending: Reforming ‘Use It or Lose It’ Rules” (Testimony before Senate Subcommittee on Federal Spending Oversight and Emergency Management, Mercatus Center at George Mason University, Arlington, VA, September 20, 2017).

7. Rand Paul, “Prudent Planning or Wasteful Binge? Another Look at End of the Year Spending” (Statement by Chairman of the Subcommittee on Federal Spending Oversight and Emergency Management, Washington, DC, September 20, 2017).

8. Michael F. McPherson, “An Analysis of Year-End Spending and the Feasibility of a Carryover Incentive for Federal Agencies” (master’s thesis, Naval Postgraduate School, 2007).

9. Adam Andrzejewski, “Use It or Lose It: Trump’s Agencies Spent \$11 Billion Last Week in Year-End Spending Spree,” *Forbes.com*, October 3, 2017; Kellan Howell, “Federal Agencies End Fiscal Year with Shopping Spree,” *Golden Hammer, WashingtonTimes.com*, October 1, 2015; and Paul Muschick, “Government Needs More Scrooges to Protect Taxpayers,” *Morning Call*, December 28, 2017.

10. Andy Radla, “Treasury Board President Tony Clement Calls for an End to March Madness Spending,” *Canada Politics, Yahoo News*, February 3, 2012.

Although these examples have contributed to a conventional wisdom suggesting that year-end spending is less efficient, researchers have struggled to find data to this effect. In their 2017 paper, Jeffrey Liebman and Neale Mahoney found evidence of such a phenomenon.<sup>11</sup> They looked at this question theoretically by describing end-of-year spending as having “zero opportunity cost.” In this telling, since the alternative to spending funds is losing them, using year-end funds for lower-quality projects is still more beneficial from an agency perspective than doing nothing at all—even if the public views the overall trend as wasteful. Liebman and Mahoney tested their theoretical framework by examining information technology (IT) projects from the website IT Dashboard ([www.itdashboard.gov](http://www.itdashboard.gov)), which tracks spending on and activities within federal IT projects. The data on these activities describe when funding was obligated and at what amount. More important, the data also provide ratings for the overall quality of project performance. Liebman and Mahoney’s results find project quality to be generally below average for year-end spending projects, unless agencies have carryover authority (in those cases, spending projects are above average in quality). These findings form the basis of the following analysis.

## RESEARCH DESIGN

To build on past research into year-end spending quality, we calculated the statistical correlations between spending dates and spending quality using data from IT Dashboard and the Federal Procurement Data System (FPDS).<sup>12</sup>

First, we downloaded publicly available IT project data from IT Dashboard. One major benefit of examining IT projects, as Liebman and Mahoney point out, is the ubiquity of such spending, which is “carried out by nearly all components of the US federal government.”<sup>13</sup> Our data cover fiscal years 2014 through 2017 and include variables identifying the federal agency for each activity, the timing of activity contracts, the start and end dates of activity (planned, projected, and actual), spending levels for each activity, activity rating by the chief information officer (CIO), and the activity’s deviation from its planned schedule and budget.

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11. Jeffrey B. Liebman and Neale Mahoney, “Do Expiring Budgets Lead to Wasteful Year-End Spending? Evidence from Federal Procurement,” *American Economic Review* 107, no. 11 (2017): 3510–49.

12. Gabriel Nelson, a researcher for the Section 809 Panel, provided expertise on some of the methodological issues associated with this section.

13. Liebman and Mahoney, “Do Expiring Budgets Lead to Wasteful Year-End Spending?”

To measure year-end spending, we created new variables to indicate the month that fiscal year contracts were signed.

To examine spending quality, we looked at the CIO ratings of specific IT projects, as well as schedule and budget overruns, similar to Liebman and Mahoney. CIO ratings are the evaluations of IT investments by an agency's chief information officer "based on his or her best judgment, using a set of pre-established criteria."<sup>14</sup> The evaluations are meant to reflect the CIO's assessment of each investment's risk and ability to accomplish its goals, measured on a scale ranging from 1 (high risk) to 5 (low risk). Because CIO ratings are subjective and potentially biased, we also sought other metrics that might indicate a project is of lower quality, such as schedule or budget overruns. The latter two variables are measured in IT Dashboard by "schedule variance," which is calculated by subtracting the activity's actual or projected completion date from its planned completion date, and by "cost variance," which is calculated by subtracting the activity's actual or projected total cost from its planned total cost. While projects' schedule variance and cost variance are not necessarily indicative of projects' quality in all cases, over-budget or delayed projects may signal poor planning or disorganization in the projects' implementation. Examining these metrics across all projects and agencies can provide a proxy for project quality that is more objective than CIO ratings.

There are a few notes of caution that come with use of data from IT Dashboard. First, the website's datasets lack clearly documented definitions for a number of variables. For example, variables labeled "Investment Event ID" and "CIO Rating ID" feature nothing more than a sequence of identifying numbers for each IT activity. Second, the accuracy of CIO ratings in particular may be suspect. The GAO's June 2016 risk assessment of 25 DOD IT programs found that for more than three-quarters of programs reviewed (19 programs), the CIO ratings underestimated the amount of risk associated with the program in question.<sup>15</sup> A separate case study found that one particular IT program saw its CIO rating change at least six times over the course of four years. This kind of inconsistency makes it more difficult to objectively and consistently measure the quality of IT projects and activities.<sup>16</sup>

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14. "Frequently Asked Questions," IT Dashboard, US Office of Management and Budget, accessed May 12, 2018, <https://itdashboard.gov/drupal/frequently-asked-questions>.

15. US Government Accountability Office, *IT Dashboard: Agencies Need to Fully Consider Risks When Rating Their Major Investments*, June 2, 2016.

16. See, for example, US Government Accountability Office (GAO), *Information Technology: OMB Has Made Improvements to Its Dashboard, but Further Work Is Needed by Agencies and OMB to Ensure Data Accuracy*, March 15, 2011; GAO, *IT Dashboard: Accuracy Has Improved, and Additional Efforts Are under Way to Better Inform Decision Making*, November 7, 2011; and GAO, *IT Dashboard: Agencies Are Managing Investment Risk, but Related Ratings Need to Be More Accurate and Available*, December 12, 2013.

Given these flaws, relying only on IT Dashboard might not yield the most reliable information. Therefore, we also looked at general spending data from FPDS. FPDS is an online database that tracks all federal contracts and allows the public to access, search, and download data.<sup>17</sup> The system allows users to specify parameters for retrieving ad hoc reports so that they can search for a narrow subset of contract data that highlights variables of interest. We downloaded contract data for FY 2014 through FY 2016 from the Departments of Energy and State, which, respectively, were found by Fichtner and Michel to have the smallest and largest amounts of spending in the last month of the fiscal year, in terms of their percentages of overall contract expenditures within the departments.<sup>18</sup> Besides looking at the timing for each contract in FPDS, we sought to determine spending quality by highlighting whether each contract included a bidding process, and the number of bidders for each. Because FPDS does not include subjective variables of quality (e.g., CIO ratings in IT Dashboard) or measures of how the projects performed according to previously established benchmarks (e.g., cost or schedule overrun), we had to use other proxies to measure project performance. Directors of federal projects may choose to have several outside firms bid on a contract, or they may award the contract to a single firm without using a bidding process. Our assumption here is that directors who allow a bidding process are able to weigh past performance, compare project proposals, and consider the comparative advantages of multiple firms, and thus maximize the expected quality of the project. By this logic, project directors who invite more firms to compete for a contract will be able to consider more firm characteristics, thereby further increasing quality. By contrast, project directors who do not employ an open bidding process or whose projects attract few bidders will have fewer opportunities to weigh strengths and weaknesses of difference contractors. Admittedly, there may be flaws in this approach. For example, some projects could require specific expertise that can only be delivered by a single firm, which means that an open bidding process would not be a worthwhile way to determine the best contractor. Still, the presence or absence of a bidding process provides an objective metric—one that can be applied across federal projects and which is at least somewhat indicative of project quality in FPDS.

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17. “Federal Procurement Data System,” US General Services Administration, accessed November 1, 2017, <https://www.fpds.gov/>.

18. Liebman and Mahoney, “Do Expiring Budgets Lead to Wasteful Year-End Spending?,” table 2.



TABLE 1. METRICS OF YEAR-END SPENDING AND QUALITY OVERALL (IT DASHBOARD)

Variables	Correlation	Standard Error
Last Month FY & CIO Rating	0.1375	(0.0690)
Last Month FY & Schedule Variance	0.0110	(0.0697)
Last Month FY & Cost Variance	0.0435	(0.0696)
Last Month FY & Obligation Amount	0.1064	(0.0693)

## FINDINGS

Using data from IT Dashboard and FPDS, we highlighted our variables of interest and calculated their correlation with spending at different times during the fiscal year. For IT Dashboard, we merged data from fiscal years 2014 through 2017 according to “Unique Investment ID” (UIID), which identifies specific projects within federal agencies. Each project consists of multiple activities sharing the same UIID. We dropped observations with missing values for contract signing date, cost variance, schedule variance, or spending level. We then used pivot tables to aggregate the data at the UIID level, leaving us with a dataset of 208 observations.<sup>19</sup> After that, we determined the timing of the projects at the UIID level. Since every activity within a UIID has its own contract signing date, we chose the earliest contract signing date to refer to the entire project at the UIID level. Spending amounts for each project were determined by summing the “action obligation” for the activities within each UIID. Quality measures like CIO rating, cost variance, and schedule variance were averaged within each UIID. To determine the relationship between year-end spending and quality, we created a binary variable with value 1 if the UIID contract was signed in the last month of the fiscal year and 0 otherwise, and we calculated the correlations between that variable and average CIO rating, obligation amount (referring to total spending), schedule variance, and cost variance. There were 57 projects obligated in the last month of the fiscal year and 151 that were not. The results are shown in table 1.

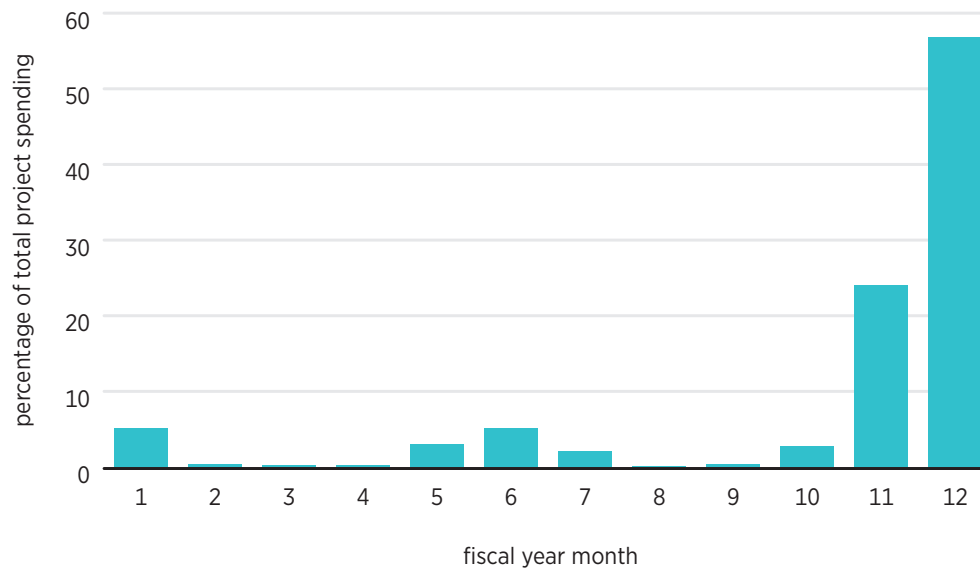
These results do not indicate a strong relationship between year-end spending and other variables. The results for Last Month FY & CIO Rating and Last Month FY & Obligation Amount were the strongest of the variables examined. However, the correlations are still relatively weak—never exceeding 0.15—and are even smaller for schedule variance and cost variance. They do confirm a

19. Liebman and Mahoney’s paper did not specify at what level they defined or analyzed federal projects, but their dataset included 686 projects (after dropping 73 that lacked quality measures), suggesting that they were able to capture more data from previous years or that they analyzed projects at a level besides UIID.

TABLE 2. CIO RATINGS FOR LAST MONTH FY PROJECTS

Last Month FY	CIO Rating Average
Yes	4.1141
No	3.9012
Total	3.9588

FIGURE 1. PROJECT SPENDING BY FY MONTH CONTRACT WAS SIGNED



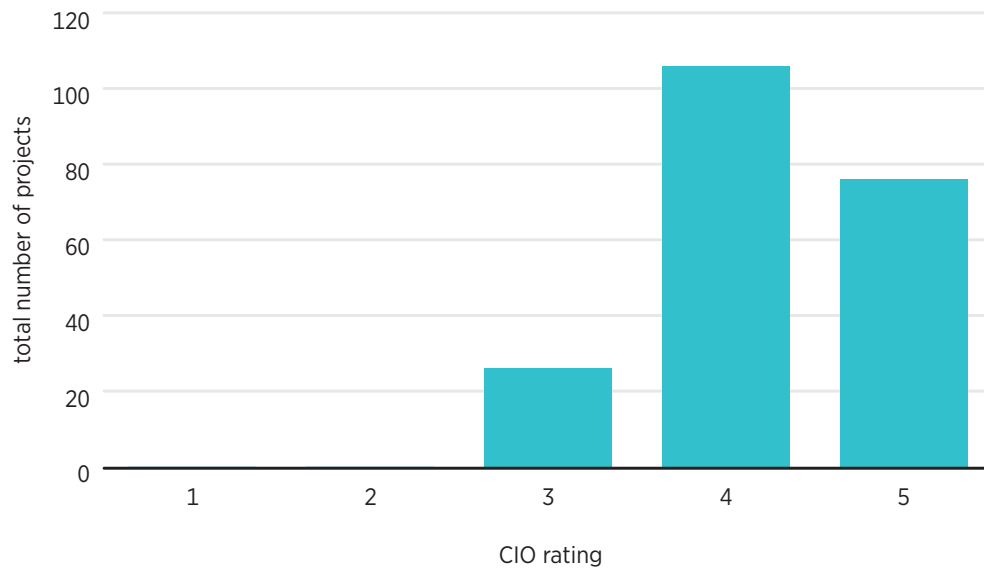
Note: On the horizontal axis, the numbers for “fiscal year month” begin with October as “1” and end with September as “12”, to correspond with the US government’s fiscal year.

Source: “IT Dashboard,” US Office of Management and Budget, accessed May 12, 2018, <https://itdashboard.gov/>.

positive relationship between end-of-year projects and spending amount. They also, counterintuitively, indicate a positive relationship between end-of-year projects and CIO rating, meaning such projects would be of higher quality. As shown in table 2, calculating the average CIO rating for projects originating in the last month of the year and projects originating during the rest of the year reaffirms this finding from the data.

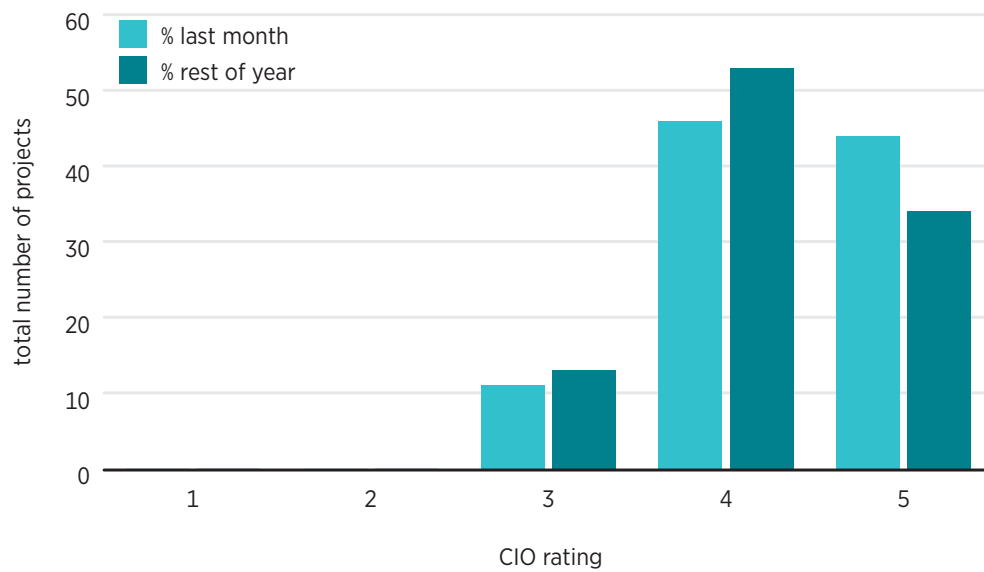
Figures 1–3 summarize spending levels based on signing dates for project contracts, CIO ratings for the entire dataset, and CIO ratings based on whether or not the project was signed during the last month of the fiscal year. Summary statistics can be found in the appendix.

FIGURE 2. PROJECTS BY CIO RATING



Source: "IT Dashboard," US Office of Management and Budget, accessed May 12, 2018, <https://itdashboard.gov/>.

FIGURE 3. PROJECTS BY CIO RATING AND CONTRACT TIMING



Source: "IT Dashboard," US Office of Management and Budget, accessed May 12, 2018, <https://itdashboard.gov/>.

TABLE 3. YEAR-END SPENDING AND QUALITY FOR DEPARTMENTS OF ENERGY AND STATE (FPDS)

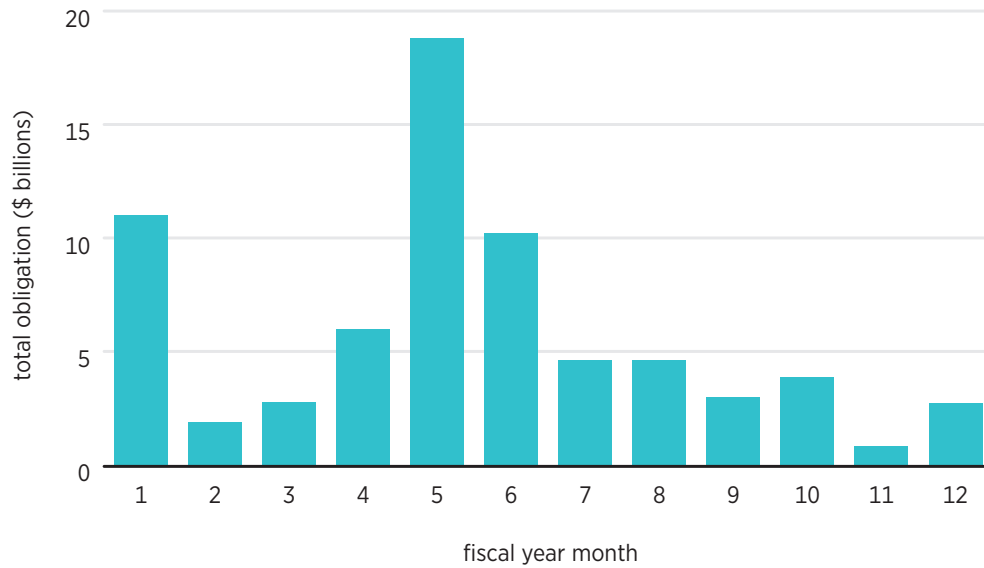
US Department of Energy		
Variables	Correlation	Standard Error
Last Month FY & Bidding Process	0.0264	(0.0010)
Last Month FY & Number of Bidders	0.0881	(0.0099)
Last Month FY & Action Obligation	-0.0263	(0.0010)
US Department of State		
Variables	Correlation	Standard Error
Last Month FY & Bidding Process	0.0177	(0.0068)
Last Month FY & Number of Bidders	0.0130	(0.0068)
Last Month FY & Action Obligation	0.0864	(0.0068)

In FPDS, we compiled Department of Energy and Department of State data for 2014 through 2016, including each contract’s signing date and spending level and whether there was a bidding process (“Extent Competed”). If there was a bidding process, we also included the number of bidders (“Number of Offers Received”). For each department, we created binary variables to indicate whether projects began in the last month of the fiscal year and whether there was an open bidding process for the project. The latter was calculated by looking at different labels for the “Extent Competed” variable, which are “Competed under SAP,”<sup>20</sup> “Full and Open Competition,” “Not Available for Competition,” “Not Competed under SAP,” and “Not Competed.” Projects with the first two labels were coded with a 1, indicating a competitive bidding process, and otherwise coded with a 0. In the State Department, we eliminated 274 observations that had both a value of 999 for “Number of Offers Received” and a value of \$0.00 for “Action Obligation.” We surmised that such outliers represented either placeholder projects or coding errors, since they included an extraordinary number of bidders without any spending. However, we did include 383 projects with 999 bidders because those projects had an Action Obligation value greater than \$0.00. In total, we examined 21,694 projects in the State Department and 9,992 projects in the Department of Energy, taking correlations between each variable. The results for each department are shown in table 3, with standard errors in parentheses.

Like the IT Dashboard calculations, the correlations between the last month of the fiscal year and the other variables are extremely weak—even weaker than for the IT Dashboard data. It is difficult to say with any confidence

20. “SAP” refers to “Simplified Acquisition Procedures” for government purchases.

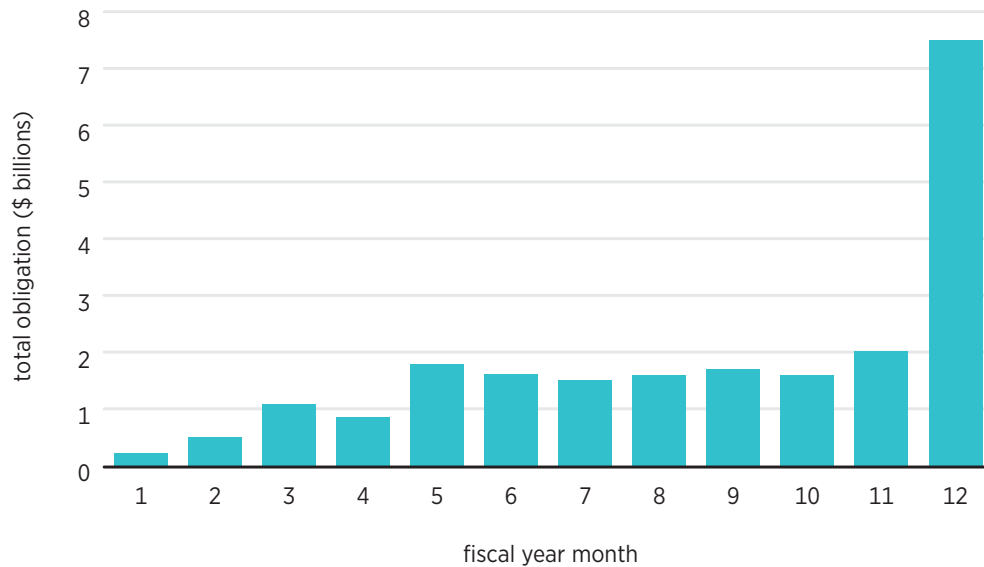
**FIGURE 4. US DEPARTMENT OF ENERGY ACTION OBLIGATIONS BY MONTH, SUM OF FY 2014 THROUGH FY 2016**



Note: On the horizontal axis, the numbers for "fiscal year month" begin with October as "1" and end with September as "12," to correspond with the US government's fiscal year.

Source: "Federal Procurement Data System—Next Generation," accessed June 6, 2018, <https://fpds.gov/>.

**FIGURE 5. US DEPARTMENT OF STATE ACTION OBLIGATION BY MONTH, SUM OF FY 2014 THROUGH FY 2016**



Note: On the horizontal axis, the numbers for "fiscal year month" begin with October as "1" and end with September as "12," to correspond with the US government's fiscal year.

Source: "Federal Procurement Data System—Next Generation," accessed June 6, 2018, <https://fpds.gov/>.

what the relationship between year-end spending and project quality is, at least for these specific variables. Figures 4 and 5 highlight monthly obligated spending. They show that State Department year-end spending follows the pattern of other agencies (with final month of the fiscal year reflecting a greater amount of spending than any other month), while the Department of Energy has its biggest month near the middle of the fiscal year, in February. Summary statistics can be found in the appendix.

## FUTURE RESEARCH

Although our findings did not find a “smoking gun” indicating an obvious link between project timing and quality, anecdotal evidence continues to suggest that year-end spending is wasteful, and the conventional wisdom to that effect is pervasive enough to warrant future research on the subject. The potential problems with our analysis may lie in data availability or study methodology and structure.

The previously stated concerns with sources like IT Dashboard make it more difficult to find objective measures of project quality that are consistent across projects, agencies, and time. The data that are available are subject to unexplained or unexpected change, or they may lack definitions and explanations. The IT Dashboard team could improve IT Dashboard by imposing more rigorous standards for data collection and publication and by increasing the transparency of their methodology. Legislation in Congress, such as the Modernizing Government Technology Act, which passed the House of Representatives in May 2017, would impose new requirements on data availability via public websites.<sup>21</sup> This legislative action suggests that there are efforts underway to make IT Dashboard a more reliable source in the future. Public databases for other types of federal spending besides IT projects can also contribute toward a more comprehensive picture of federal spending that occurs across agencies, such as spending on personnel, human resources, or other operations.

Sources like FPDS are able to provide a more complete picture of federal contracts in addition to IT Dashboard, but they do not include enough measures of project outcomes, especially against benchmark performance metrics. Previous presidential administrations have made efforts to mandate the collection of performance ratings for contractors and projects,<sup>22</sup> but that information does not

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21. Modernizing Government Technology Act, H.R. 2227, 115th Cong. (2017).

22. See, for example, US Office of Management and Budget, “Office of Federal Procurement Policy Contractor Performance Information,” archived website of the Obama White House, accessed May 12, 2018, [https://obamawhitehouse.archives.gov/omb/procurement\\_index\\_contract\\_perf/](https://obamawhitehouse.archives.gov/omb/procurement_index_contract_perf/).

appear to be available to the general public. Where possible, that information should be made available for public consumption so that researchers and groups advocating for good government can learn more about federal spending activities and help detect instances of waste or fraud. This should be done by congressional statute or executive rulemaking.

Future studies may be able to improve upon our methodology using existing data as well. It is possible that other metrics would be better suited to measuring project quality. Examining different periods of year-end spending—such as the final days or weeks of the fiscal year, rather than the final month—could better capture the rush to use remaining funding. It is also possible that digging into the details of specific agencies, projects, or activities—rather than taking only a general look at department- or agency-level spending—would provide a better picture of trends within the unique operations and cultures of different federal bodies. Researchers using such an approach could also examine multiple determinants for year-end spending. Additionally, they could look at spending quality using regression analysis, and they could look in depth at the types of expenditures that spike at the end of the year, such as payroll or inventory expenses. Finally, it is possible that only a few contracts are responsible for a disproportionate amount of wasteful year-end spending. In that case, it would be useful to identify those areas and examine them through data analysis or qualitative case studies. There are myriad ways to examine year-end spending, and existing papers have only scratched the surface. Regardless, expanding data availability to the public would help make such efforts easier.

## CONCLUSION

An expanding body of literature confirms that federal year-end spending is proportionately higher than spending at other times of the year. Some attempts to examine the quality of year-end spending have come up short because of methodological reasons or because of a lack of reliable public data, whereas others have found year-end expenditures to have a negative effect on spending quality. Anecdotal evidence continues to be the main evidence supporting the hypothesis of wasteful year-end spending, but it is not sufficient. We hope that future attempts to examine this phenomenon will achieve more definitive results. Increased transparency and reliability of federal data would go a long way toward this goal.

## APPENDIX: SUMMARY STATISTICS

**TABLE A1. IT DASHBOARD SUMMARY STATISTICS, FY 2014–2017: FULL DATASET**

Variable	Mean	Median	Standard Dev. (Pop.)	Min.	Max.
Month of FY	8.25	10	3.71	1	12
CIO Rating	3.94	4	0.77	1	5
Schedule Variance %	-50.11	0	1,757.09	-81,200	9,100
Cost Variance %	-4,266.50	0	572,210.35	-86,168,800	100
Obligation Amount	52.83	3.57	183.02	0	2,529.72
N	19,071	19,071	19,071	19,071	19,071

Source: "IT Dashboard," US Office of Management and Budget, accessed May 12, 2018, <https://itdashboard.gov/>.

**TABLE A2. IT DASHBOARD SUMMARY STATISTICS, FY 2014–2017: PIVOT TABLE SUMMARY, BY UIID**

Variable	Mean	Median	Standard Dev. (Pop.)	Min.	Max.
Month of FY (Min.)	6.77	6	4.07	1	12
CIO Rating (Avg.)	3.96	4	0.68	2.13	5
Schedule Variance % (Avg.)	-44.41	-5.63	662.544	-2,878.15	8,186.73
Cost Variance % (Avg.)	-1,385.44	0.00	19,353.77	-279,811.32	95.74
Obligation Amount (Sum)	5,809.99	286.38	27,876.61	0	276,354.45
N	208	208	208	208	208

Source: "IT Dashboard," US Office of Management and Budget, accessed May 12, 2018, <https://itdashboard.gov/>.

**TABLE A3. FPDS SUMMARY STATISTICS, US DEPARTMENT OF ENERGY, FY 2014–2016**

Variable	Mean	Median	Standard Dev. (Pop.)	Min.	Max.
Month of FY	7.0	7.00	3.44	1	12
Project Completed?	0.70	1	0.46	0	1
Number of Bids	3.03	2	4.41	0	110
Obligation Amount	6,953,160.79	32,051.20	64,281,584.19	-761,049,578.11	3,156,341,708.81
N	10,092	10,092	10,092	10,092	10,092

Source: "Federal Procurement Data System—Next Generation," accessed June 6, 2018, <https://fpds.gov/>.



TABLE A4. FPDS SUMMARY STATISTICS, US STATE DEPARTMENT, FY 2014–2016

Variable	Mean	Median	Standard Dev. (Pop.)	Min.	Max.
Month of FY	7.13	7	3.44	1	12
Project Completed?	0.83	1	0.38	0	1
Number of Bids	23.86	3	131.17	0	999
Obligation Amount	1,009,184.94	43,007.58	7,470,995.50	-200,861,416.22	442,714,931.08
N	21,694	21,694	21,694	21,694	21,694

Source: "Federal Procurement Data System—Next Generation," accessed June 6, 2018, <https://fpds.gov/>.

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