Whose Priority is it? What determines spending choices on fire risk reduction projects by federal land management agencies?

Sarah Anderson
Heather Hodges
Stuart Kasdin

For Presentation at the November, 2015 APPAM Conference, Miami Florida
Comments and questions to Heather Hodges at hehodges@reed.edu
Whose Priority is it? What determines spending choices on fire risk reduction projects by federal land management agencies?

Introduction

The costs of wildfire suppression have been increasing for the Forest Service: while in 1995, fire made up 16 percent of the Forest Service’s annual appropriated budget, by 2015, greater than 50 percent of the Forest Service’s annual budget will be dedicated to wildfires. Part of the reason is because of continued development near national forests. These areas, referred to as the Wildland Urban Interface (WUI) make wildfire management more difficult because of the presence of higher populations and infrastructure to protect. Another source of the increased costs comes from the forests themselves. Because of decades of fire suppression and other actions, the forest ecosystems are damaged and unhealthy, with excessive undergrowth making them prone to catastrophic outbursts. Worse yet, the fire season is longer than it was as a result of climate change. On average the season is 78 days longer than they were in 1970, with the six worst fire seasons since 1960 coming since 2000 (Forest Service, 2015).

In response to the increasing damages and danger from wildfires, the federal government created the National Fire Plan, which relied on controlled burns, brush removal and land treatment to restore forest ecosystem health and make forests less prone to catastrophic wildfires. This plan represented a cooperative effort with states and various federal agencies to identify priority sites for land treatments so as to restore damaged ecosystems and protect communities by reducing the risk of major conflagrations.

In our paper, we examine the implementation of the National Fire Plan at the local level by district offices of the U.S. Forest Service, focusing on the different field offices’ project choices over time. We can assess the interplay of agency goals, communities’ priorities, and
political interventions. In particular, we examine what determines the allocation of program resources devoted to low priority projects?

This paper does several things that previous papers have not. First, many authors considering ‘pork’ similar concepts have relied on just the level of spending in particular places, such as how much grant funding a locale has. Thus, it doesn’t indicate that the spending in question is lower priority; merely that it is in a location of benefit to a particular member. Our paper is the first to use an objective measure of spending, in which the agency (and communities) has classified spending as a priority according to whether it is occurring in pre-designated locations of greatest need.

Second, we evaluate the implementation of a single strategic plan across different Presidential Administrations and changing partisan Congressional control. Thus because the project goals do not change over the examination period, we are able to compare the relative political influences that affect program implementation. In addition, we evaluate the influences of individual members of Congress and how their committee assignments, seniority, and individual needs based on electoral results affects project selection. We can distinguish these influences from the broader impacts emerging from the partisan control of Congress to see how different political environments shape agency choices.

We first consider the how federal agencies, especially field offices respond to discretion. What does the literature suggest influences their decision making on program implementation? Next we examine the forest service in specific, presenting a model and a series of hypotheses to explain the National Fire Plan implementation choices for the district offices. We then test these hypotheses in an empirical analysis.
**Government agencies and their dysfunctional family of political overseers: What motivates program implementation choices by decentralized agency field offices?**

Government agencies must respond to multiple entities with authority over the agency, including Congressional committees, appropriation committees, the White House, the Office of Management and Budget, and departmental officials. One result of having to respond to many players can be to create administrative discretion for the agency (Langbien, 1999). By playing one of the principals off the other, agencies may find a state of “bureaucratic drift,” in which they can choose their preferred policy direction due to the lack of consensus among the principals. Moreover, the drift created by the presence of multiple principals will be accentuated when the principals involved in the initial program design disagreed about the program design or even agency design (Anderson and Potoski 2015). Similarly, organizations with multiple and/or conflicting goals may provide bureaucrats with the opportunity to decide on which goals to prioritize (Chun and Rainey 2005; Meier 1993; Pandey and Wright 2006; Rainey 1993; Keiser, 2010). However, multiple principals and multiple goals may make management more difficult: each principal will want to divert the agency’s efforts to its preferred goal or dimension of output, and away from other program elements preferred by other principals (Shepsle and Bonchek, 1997; Dixit 2002). As a result, when discretion is available, agencies may not know which path to pursue.

The field offices of large government agencies organized with extensive, geographically dispersed, decentralized units would seem to have a high level of discretion at the local level, given that they are (a) responsible to multiple principals, both at the national level, but reflecting the greater influence of local authorities, and (b) often prone to asymmetric information associated with long information chains. For example, Sabatier, Loomis, and McCarthy (1990) found that Forest Service supervisors could follow their professional judgment in putting
together the forest level strategic planning documents. Yet, they were also responsive to environmental influences and community preferences. Similarly, in studies by Anderson, Hodges, and Anderson (2013) and Anderson and Anderson (2012), the Forest Service overall appeared to balance ecological, economic, and political interests in the case of fuels reduction activities despite considerable discretion.

What determines how the field office and street level bureaucrats operate with that flexibility? The first explanation to explain program implementation choices is that agencies seek to achieve their broader strategic goals and the policy objectives of the program (Lynn, Heinrich and Hill, 200). Agency personnel may be motivated to accomplish the program purposes because they are committed to its mission (Francois, 2000; Crewson, 1997; Wright, 2007) and to public service (Perry, 1996; Perry and Wise, 1990; Fredrickson and Hart, 1985; Rainey, 1982). Agencies with well-defined missions may attract employees motivated by public service motivation, concerned with outcomes, who believe they can contribute to achieving mission-driven goals by joining the agency (Francois, 2000).

Another explanation for the program implementation choices of the agency field offices is based on politics. Federal agencies are dependent on Congressional appropriations for funding. In the federal budget process, it is not the program output level or organizational cost structure that produces agency revenues, but rather the preferences of political players. “Efficiencies are no longer the solution to organizational problems…” (p. 94, Pfeffer and Salancik, 1978). Instead, agencies must cultivate the good will of Congress and the White House to secure the agency’s financial resources.

Accordingly, bureaucratic agencies are responsive to political principals (Moe, 1985; Wood and Waterman, 1991), to the extent that politicians influence frontline actions of field
agents (Meier, O’Toole, Nicholson-Crotty, 2004). A number of studies have that the political environment shapes how agents apply regulatory behavior (Scholz and Wei, 1986; Lowry, 1992; Wood and Waterman, 1994).

One consequence of the responsiveness of agents to their political principals may be in “pork”. Legislators may seek specific projects, such as increased funding in a Congressional committee chairperson’s district for which they can receive recognition from their constituents (Mayhew, 1974). In general, because US legislators face a continual pressure to build a personal reputation in order to secure their reelection they may seek particularized projects for their districts or states for which they can claim credit (Katz 1986; Carey and Shugart 1995). Stein and Bickers (1994) and Bickers, et al (2007) find interest and community groups are more likely to support those House members who can produce pork projects.

Nevertheless, pork is not inevitable. “Because the executive and the legislature represent different constituencies, are selected by different processes, and use different internal decision processes, the demands for services expressed by the legislature will usually be different from those initially expressed by the executive” (Niskanen, 1994, p. 27-8). Presidents with their national constituency may prefer less pork or a different allocation than legislators may prefer.

As a result, the partisan political environment in which an agency must operate also matters in determining program delivery choices. As partisan control of the Congress and Presidency changes, agencies may be called upon to respond to different principals (Berry et al., 2010; Berry and Gerson, 2010). Moreover, national political conditions influence program implementation, such as in choice of pork. If agency administrators respond to elections and favor the Congressional districts of the winning party with more benefits, then macro-level
political influences, the tectonic political shifts from one party’s control of Congress to another, or from one Presidential party to another will change agency policy decision making.

We can also look at the role of the local Congressional legislators in driving the decision making of bureaucrats in the field. Scholz, et al (1991) found that the federal, state, and local politician’s political orientations affected the regulatory enforcement for the county level Occupational Safety Health Administration cases. Enforcement subject to local discretion was responsive to political influences: more liberal, Democratic districts received more enforcement than conservative, Republican districts. Moreover, this political influence was most acutely felt from the most local level politicians.

In social policy, partisan control of state governments systematically affected the discretionary use of the ‘good cause’ exemptions in child support payment enforcement (Kaiser and Soss 1998). In a similar fashion, variations across states in the implementation of the Social Security Disability program is partially in response to state partisan politics (Keiser, 1999). Thus broader state-level forces influence the outcomes of individual bureaucratic encounters. Similarly, at the local level, the attention of elected officials mattered in what field workers emphasized in how caseworkers responded in assisting the unemployed seeking jobs (May and Winter, 2007). The attention of local politicians had a greater influence on the behavior of the field agents than national policy goals (May and Winter, 2000). In general, Langbein (2000) found that the degree of agreement among policy principals is important in shaping the influence of signals. In particular, when there is inconsistency in the message at different levels, it lends more influence to the more immediate elected political officials.

**Land Management Agencies and Field Unit Management Decision Making**

The Forest Service is decentralized and geographically expansive; the field offices’ day-to-day work is shielded from the oversight of the distant Washington offices. Yet prior to the
1980s it largely succeeded in overcoming the tendencies toward fragmentation and lack of direction. Establishing a set of shared values, procedures, and traditions across the agency enabled it to avoid the centrifugal forces undermining central agency policy control.

The Forest Service was seen as successful in establishing a unified and internally self-directed agency, with a reputation for effectiveness and efficiency. It neutralized constituent demands and reinforced a national policy goal orientation built on a set of common values and a sense of mission (Kaufman 1960; Sabatier, Loomis and McCarthy 1995; (Koontz, 2007). One way the agency maintained a unified perspective was for the staff to rely on their neutral competence; they used technical, expert management to insulate themselves from the public pressures. The agency began by recruiting like-minded people in the agency (Kaufman 1956), which may have led to a lack of employee diversity later in the century (Koontz, 2007). In addition, the agency rotated personnel after a fixed numbers of years (as well as including stints in the Washington Office) in order to prevent field staff from “going native” (Kaufman, 1960).

The legislative and physical environment started to change for land management agencies in the 1970s with the passage of the National Environmental Policy Act (NEPA), which required a public evaluation of alternatives for projects on federal lands, the Endangered Species Act (ESA), which provided legal protection for certain species, and the National Forest Management Act (NFMA), which established a public process for evaluating multi-year strategic plans for each forest. Each of these laws both mandated public participation and created judicial oversight mechanisms.

By the 1990s, as a result of changing public opinion and court decisions brought on by clear cuts of old growth forests and the declining populations of the northern spotted owl and other endangered species with habitat in the national forests, the consensus on management of
the national forests fell apart. In response, the Clinton Administration, dissatisfied with the response of the Forest Service to these challenges, fired the chief of the Forest Service, traditionally a non-partisan office, with lifetime tenure.

The subsequent years brought enormous conflict. Whereas in the early 1990s, the Forest Service offered over 11 billion board feet of timber for sale to the public, only ten years later the timber harvest had fallen to around 2 billion board feet (OMB, 2003); between 1989 and 2004 timber sale levels from national forests fell by more than 80 percent (MacCleery, 2008). This dislocation prompted considerable conflict: communities that bordered the national forests with logging, milling and other resource-related jobs supported more resource extraction from the national forests. Environmental groups supported the species preservation and ecosystem protection functions of the national forests (O'Toole, 1994). Congress was equally divided. Many in the Republican controlled Congress through 2006, (and the Bush Administration, through 2008) supported higher timber sales, as well as lower fees for grazing on public lands, and were dissatisfied with the agency’s administration of the forests.

The role of the agencies in the field has changed. Now, the agencies must facilitate dialogue and forge consensus among interested parties that frequently have conflicting interests (Tipple and Wellman, 1991). The agencies are responsible for finding accommodation with local interests, using conflict mitigation approaches to produce compromise outcomes.

However, over the same time period, a new challenge emerged for the agencies. Forest health has deteriorated over the past 100 years, mostly as a result of the effective fire suppression actions. Forests that were adapted to having low intensity fires regularly sweep through the forest floor burning off small diameter brush and saplings were left to accumulate excessive forest growth. The result is a congested forest floor with an increased vulnerability to large fires
and an increased variance from its long-term habitat conditions. As a result of years of accumulated fuel build-ups, naturally occurring fires are highly destructive and difficult to contain. In 1995, fire made up 16 percent of the Forest Service’s annual appropriated budget. By 2015, more than 50 percent of the Forest Service’s annual budget will be dedicated to wildfire.

As a response, the USDA, the Department of the Interior and agencies with land management responsibilities produced the bipartisan National Fire Plan:

“In August 2000, then-President Clinton directed the Secretaries of Agriculture and the Interior to develop a response to severe wildland fires, reduce fire impacts on rural communities, and ensure effective firefighting capacity in the future. The result was the National Fire Plan, which Congress later supported through appropriations language in the FY 2001 Appropriations Act and other written direction. As part of its direction, Congress mandated several reporting requirements including the creation of a coordinated national 10-Year Comprehensive Strategy. It also called on the Secretaries to work collaboratively and cooperatively with Governors in the development of this strategy and as full partners in planning, decision making, and implementation. This resulting strategy has been developed by Federal, State, tribal, and local government and nongovernmental representatives for the purpose of improving the management of wildland fire and hazardous fuels, as well as meeting the need for ecosystem restoration and rehabilitation in the United States on Federal and adjacent State, tribal, and private forest and range lands. In addition, this strategy outlines a new collaborative framework to facilitate implementation of proactive and protective measures that are appropriate to reduce the risk of wildland fire to communities and the environments.”

The National Fire Plan significantly expanding hazardous fuels reduction projects, carried out by prescribed burns, and manual thinning treatments to bring the forests closer to long-term, healthy conditions. These fuels treatments are designed to reduce the risk of catastrophic fires to communities. As part of the plan, the agencies established priority areas, particularly in the Wildland Urban Interface, for targeted treatments. Without targeting, a regime of regular, on-going land covering over 190 million acres (an area the size of California and the acres cited as needing treatments to reduce the risk of large scale wildfires) with the billions of dollars that would imply would not be feasible.
Yet not all the NFP funds were spent in locations designated as a priority. In this paper we explore, why and when the Forest Service would have chosen to allocate resources to non-priority sites.

**A model of the US Forest Service field offices’ program implementation choices**

We examine the decision making choice for a ranger district upon the receipt of the funds to implement the national fire plan. The decision on which treatment projects to choose is a decision of the forest supervisors and district rangers emerging out of the forest planning process (Sabatier, Loomis, and McCarthy, 1990).

We can assume that a ranger district cares about the treatments that advance national policy goals. In our model, a ranger district is choosing projects to implement the NFP. Thus we see a district choosing between using fire risk reduction funds for either fire reduction treatments identified as a priority in the NFP, which help to accomplish formal agency goals, or for other uses, such as timber stand improvements (e.g., thinning trees), and other treatments in non-priority locations.

A forest’s utility is based on \( U(z, x) = u(z) + u(x) \) or using a Cobb Douglas function, \( U(z, x) = \beta \ln(z) + (1 - \beta) \ln(x) \), where \( 0 < \beta < 1 \), and the forest’s budget constraint is \( y = z + x \).

In this case, the \( x \) reflects the treatment acreage agencies have specifically identified as priority. The individual forests are expected to use federal resources according to mandates of the legislation in order to maximize program accomplishments. The \( z \) acreage reflects treatment outside the priority designation areas but using resources aimed to implement the National Fire Plan. These non-priority acres may represent the accommodations that the ranger district makes to Congressional or local interests. These treatment acres reflect a quasi-public good; they may be appreciated by the local community, providing timber and other forestry jobs or
accomplishing other local goals, but otherwise the forest health benefits may be lower than elsewhere.

We consider what factors encourage a ranger district to divert resources to the non-priority treatments. One explanation is political influences. An agency’s preference for the quasi-public goods may be based on the appreciation that Congress has -- the more identifiable, local benefits of the timber stand improvement and the other non-priority area treatments offers greater credit claiming benefits for Congressional members. If Congress cares about the priority and non-priority acres and will include this judgment as part of their decision making for future appropriations, agencies will “gain” an appreciation, encouraging the agency to fund the non-priority treatments. In other words, one explanation is that ranger districts within a forest fund the non-priority projects because they care about future budgetary resources in order to fund priority treatments.¹

The decision to allocate resources to non-priority areas may reflect the USFS’ response to the national level political conditions. When political control changes in Congress, so too might the incentives for an agency to provide non-priority projects to a district whose member has less influence.

*Partisan Hypothesis:* Areas represented by members of the majority party in Congress will be allowed greater drift.

We investigate this hypothesis by examining the 2006 Congressional election, when partisan control of Congress shifted from Republican to Democratic control. We expect that after the 2006 election, national forests and their ranger districts will place increased non-priority projects in Democratic districts and out of Republican districts.

*Presidential Pork Hypothesis:* Areas overseen by mostly members of the President’s party will be allowed greater drift.

¹ The agency as a whole benefits from the positive feelings of Congress. Individual land managers respond to both the potential for stable and additional funding, as well as to hierarchy. That is, when the agency leadership rewards the local forest managers based on how well they mollify or curry favor with congressional members, forest supervisors will respond accordingly.
We investigate this hypothesis based on the 2008 Presidential election. We examine how agencies responded when the Presidency shifted from Republican to Democratic. We expect that after the 2008 election, Democratic districts will receive increased non-priority treatments.

Local Congressional membership and not partisan control may matter in the allocation of resources. The choice along the districts indifference curve is altered when it faces a more unified Congressional representation by those members bordering a ranger district. More powerful Congressional committee members will increase the utility from providing the non-priority treatments. We examine what is the impact of the Congressional membership apart from partisan control of the chambers.

First, the logic of bureaucratic drift enabled by multiple principals leads to:

*Multiple Principals Hypothesis:* Areas with more principals (members of Congress) will exert less influence on a district ranger’s decision making, resulting in fewer non-priority projects.

Second, the individual characteristics of the MC adjoining a ranger district will affect agency decision making.

*Congressional Power Hypothesis:* Having one or more of the members on the appropriation or oversight committee or having more senior members of Congress will increase the proportion of lower priority projects.

*Competitiveness Hypothesis:* Areas adjoining districts with vulnerable Congressional representatives will be respond more readily to the principals’ entreaties and creating more lower-priority projects.

Note that our analysis controls for multiple influences on agency decision making. We focus on the behaviors of one agency, the US Forest Service. In so doing, we hold constant the influence of different degrees of public service across different agencies, as well as different agency cultures, ideological orientation, or levels of Congressional approval of the agency.

In addition, our focus on the implementation of the National Fire Plan examines the choice of treatments either in previously identified priority areas or outside these high priority
sites. As such, asymmetric information is not a factor. Congressional oversight can establish the physical location of a treatment project and whether it conforms to the National Fire Plan. As such, the choice of project is transparent to all parties.

Data and Methodology

The NFPORS database was used to identify all hazardous fuels reduction activities (prescribed burns, mechanical thinning, or preparation for reduction) occurring on Forest Service land in the western United States (regions 1 – 6) from 2001-2011. The database contains all observations of reduction activities, accounting for over 100,000 instances of fuels management over this ten year period. For each observation, characteristics of the treatment area are also recorded, including whether the treatment occurred within or outside the wildland urban interface (WUI), the condition class of the treatment acres at the time of the activity (ranging from condition class 1 to condition class 3, with condition class 3 representative of most deviated from its natural state), and the estimated fire regime of the treatment acres (ranging from a fire regime of I to VI, with I being the most extreme). The inclusion of these variables allowed us to calculate or dependent variable, the fraction of total acres treated considered priority, referred to as *Priority Acres*. Our definition of what qualifies as priority is based on the collaborative 10-year comprehensive strategy implementation plan (http://westgov.org/reports/313-wildfires).² The plan emphasizes four primary goals: improve fire prevention and suppression; reduce hazardous fuels; restore fire-adapted ecosystems; and promote community assistance. According to the plan, priority acres meet any of the following two conditions:

- In the Wildland Urban Interface

² According to the document “This Implementation Plan reflects a working collaboration with several individuals from The Department of the Interior and the Department of Agriculture, and representatives of the Governors. The Governors also consulted with and utilized input from a broader group of interested stakeholder and experts.”
• Outside the WUI, but are condition classes 2 or 3 in fire regimes I, II, or III

From this specification we calculated priority acres treated for each observation. Because the desired unit of analysis is ranger district-year, we aggregated actual acres and priority acres treated for each ranger district from 2001-2011. Over the ten-year period, a maximum of 328 ranger districts engaged in hazardous fuels activity. Application of fuels management occurred in only 127 ranger districts in 2001 with the average level of annual participation being 278 ranger districts. There are 362 ranger districts in regions 1 through 6. Thus, a minimum of 34 ranger districts (~9%) did not engage in annual hazardous fuels reductions. *Priority Acres* was calculated as the percent of acres of treatment in a ranger district that meet the priority specification in each year.

[Insert Table 1 approximately here]

GIS analysis was used to develop the political and community attributes of each ranger district. Forest administrative boundaries do not correspond to congressional boundaries. The Census’s TIGER congressional district shapefile and the USFS’s ranger district shapefile were overlayed in ArcGIS in order to determine the Congressional districts corresponding to each ranger district in the western states. A Congressional district was matched to a ranger district in the case where its boundary was touching that of the ranger district. In addition, the overlay determined the number of states associated with each ranger district in a similar fashion. The number of Congressional districts corresponding to a ranger district ranges from one to five with the vast majority of ranger districts-years (84%) only bordering one or two Congressional districts (mean = 1.75). Only eight ranger district-years bordered five Congressional districts, corresponding to three Congressional districts in California. Similarly, 75% of ranger district-years bordered only one state.
Based on our specification, the average district-year sees 83% of the treatment acres being priority areas, but there is high variability. The distribution of the dependent variable in Figure 1 shows all of the treatments in many districts in many years occur in priority areas. As a result, we analyze the full data and also the subset of district-years where less than 100% of the acres treated are in priority areas. Finally, we use a logit regression to evaluate the correlates of having 100% priority treatments.

\[
\frac{\text{priority acres treated}_{it}}{\text{total acres treated}_{it}} = \alpha + \beta_1 \# \text{ of Macro political factors}_{it} + \beta_2 \text{Micro factors} - \text{Attributes of elected officials}_{it} + \beta_3 \text{Attributes of community}_{it} + \varepsilon_{it}
\]

To evaluate the macro political factors, we analyze how agencies allocated priority and non-priority treatments in response to the changes in partisan control of the Congress, after the 2006 elections and the Presidency, after the 2008 election. The first variable of interest is Republican X 2006, which indicates the consequence of the Post 2006 electoral environment for districts represented by Republican members of Congress. Both Republican and Post 2006 are indicator variables.

The other variable of interest is MCs Party of Pres X 2009, which is based on the impacts for members of congress of the same party as the President, MCs Party of Pres, in the post-presidential political environment, Post 2009. Similarly, MCs Party of Pres and Post 2009 are indicator variables.

---

3 The data exclude district-years where the ranger district reported no fuels treatments. These zeros conflate two possible situations. They may represent complete drift, where the ranger district does not do treatments in priority areas even when they are needed. Or they may represent the opposite: a ranger district that does no treatments because there are no priority areas in need of treatment. Barring a way to distinguish these two opposing interpretations, we exclude the zeros that come from ranger districts that report not fuels treatments in this analysis. To be clear, there are still ranger district-years with 0% priority treatments where none of the reported treatments were in priority areas.
The “micro” factors show the influence of members of congress that adjoin ranger districts in a given year. One variable, Members of Congress, is the count of the number of representatives and senators that border the ranger districts, calculated as described above (min. = 3.0, max. = 10.0, mean = 4.3). The membership of legislators who border the ranger districts also considers their relative influence. Variables indicate the membership in relative committees, with a dummy variable for Appropriations membership, and a count of the Important Committee Membership, which is the total number of committees (including both appropriations or natural resources) that the relevant members of congress reside on in a given year. Mean Rank of MCs is the average rank within party of the representatives corresponding to each ranger district-year. Closest Voteshare to 50 is based on the representative from each ranger district-year with the voteshare in the most recent election that is closest to 50% and therefore an indication of competitiveness.

Results

We examine the larger political landscape, first the impact of Congress and then the President, as they influence the decision making concerning project selection of local ranger districts. Did the change in the Congressional control of congress also change how the treatment choices, whether priority or nonpriority, in ranger districts.

The partisan hypothesis would predict that the change in Congressional partisan control after the 2006 Congressional election reduce the non-priority projects in ranger districts bordering Republican Congressional districts. After the 2006 Congressional election, when Democrats gained control of the House of Representatives, ranger districts represented by at least one Republican increased the percentage of fuels treatments that were allocated to priority areas - the DD variable, Republican X 2006 is positive and significant). There is no difference in baseline priority acreage across districts with at least one Republican and those with no Republicans. Having at least one Republican among a district’s political overseers is associated
with an 8% higher priority treatment rate after 2006 than before. Thus even though Republican members of congress are more vulnerable after the 2006, with more incentive to respond to community pressures for non-priority treatments, the opposite occurs. Agencies were responsive to the Republican Congressional majority before the election and they were again responsive to the now-Democratic majority after it, by giving fewer nonpriority treatments to the minority party.

Table 2 presents robustness checks made necessary by the distribution of the dependent variable. In the first column, ranger district-years where 100% of the acreage treated was in the priority category are excluded to assess whether the hypothesized relationships hold within those ranger districts that do exhibit drift. In the robustness check, Republican is negative – agencies allocate more in the non-priority treatments to Republican districts in general. However, Post 2006 is positive so all districts received a greater degree of priority treatments after the election. However, because Republican X 2006 is positive, Republican districts received even more priority treatments, rather than the non-priority treatments. After the Democratic takeover of Congress in 2006, ranger districts with at least one Republican member of Congress have a higher percentage of priority acreage than districts with at least one Republican member did prior to 2006. Turning to the influence of the President, we see that Presidential influence operates differently than the Congressional. The variable MCs Party of Pres is positive, so agencies do not favor districts from the President’s own party with more non-priority treatments. This effect is true across the different presidential administrations, even as the congress has changed. Like Wood and Waterman (1994), agencies, even in the field, respond to the political leadership and Presidents, with their national constituency. As a generalized response, not only don’t Presidents
don’t target the districts of their co-partisans with largesse, but being a co-partisan of the President serves to reduce the non-priority treatments.

In addition, Post 2009 is positive, so that after the presidential election, there were increased priority treatments. This may reflect a “start of the new admin” factor in which the new President responds to his or her inauguration with less pork overall for both Democratic and Republican districts. It also may indicate an ideological difference: Democrats may have a preference for the priority area hazardous fuels reductions and fewer timber-related treatments.

Finally, the interactive variable -- MCs Party of PresX2009 -- is significant and negative for the district fixed effects. That indicates that after the 2008 election, the Democratic members of congress got lower percentage priority treatments, as compared to before the election. Before the election, there was a Republican President and Democratic Congress, whereas after the election, they are both Democratic. This change shifts more non-priority treatments to the districts of the president. So the Republican districts got their non-priority treatments cut back significantly, while the Democratic districts got more non-priority treatments.

[Insert Table 3 approximately here]

As in Table 2, Table 3 shows that having most members of Congress from the party of the president during the Bush Administration is associated with a higher percentage of priority acres; whereas having most from the party of the president during the Obama Administration is associated with a lower percentage of priority acreage.

The influence of the local Congressional members is hypothesized as one of the major sources driving district rangers and their forest supervisors in their choice of treatment targets in the national forests. The local Congressional members are expected to have an outsized role in forest management decision making, based on proximity.
Contrary to the *multiple principals hypothesis*, ranger districts that overlap the borders of the districts of more members of Congress show greater divergence from priority management. Across all specifications in Table 2, having more members of Congress results in a lower percentage of the acreage treated being priority acres.\(^4\) In the specifications without district fixed effects, an increase of one member of Congress is associated with a one percent decrease in treated acreage that is in the priority category. When district fixed effects are included, the effect size is bigger, although this coefficient must then be estimated off of changes in the number of members of Congress. This specification controls for the total population surrounding the ranger district, suggesting that the association of drift with a greater number of political principals is not simply a result of increased priority treatments near populations. Thus, the local members of congress can affect the decision making for priority treatments.

However, contrary to the *Congressional power hypothesis*, being overseen by members on the appropriations or oversight committees does not increase drift. The coefficients on having a member on Appropriations or an important oversight committee are not consistently distinguishable from zero across the three specifications. That each of the committee coefficients is distinguishable from zero only in the specification with time fixed effects may be evidence of some effect of committee membership, but having a member on the Appropriations Committee is associated with more priority acreage rather than less. More powerful members of Congress also do not seem to increase drift at the ranger district level, as the mean rank of the members of Congress is associated with decreased priority acreage in the specification with fixed effects by

\(^4\) We might be concerned that having more representatives is just capturing more urban ranger districts where priority acreage (because it is partly defined by the WUI) is more prevalent. However, the relationship holds when controlling for population surrounding the ranger district. In specifications not presented here, it also holds even if a dummy variable for California is included.
ranger district. In contrast to May and Winter (2009), committee membership isn’t significant, instead, partisan control is critical.

Similarly, contrary to the *competitiveness hypothesis*, the vote share of the most competitive Congressional race is not associated with levels of priority treatment, suggesting that the broader political environment – control of congress – matters but not so much district level. Individual member needs is less important to the extent that in the only model where it is significant-- the specification with year fixed effects -- the coefficient sign is positive, contrary to expectations. Controlling for the year, having one of the Members of Congress in a close race is associated with more priority treatments.

Taken together, these results suggest that attributes of individual members of Congress do not directly affect the degree of drift allowed the ranger districts. Instead, it is the collective attributes of the area that facilitate drift. Having more political overseers increases drift. And the collective Democratic party appears to reign in drift (at least in the area of fuels treatments more than the Republican party). Collective characteristics of the community economy, especially logging and grazing employment, encourage non-priority treatments, while oversight by environmental groups reduces it.

Table 3 shows that for a ranger district, having more Congressional districts is once again associated with a lower percentage of priority acres. Individual attributes of representatives (Appropriations and oversight committee membership, seniority, and competitiveness) still do not predict levels of priority treatments.

When the dependent variable is a dichotomous measure of whether the ranger district treats only priority acreage in a given year, the collective political variables are less able to predict what drives full priority treatment. In particular, having a member on the Appropriations
Committee, environmental group membership, and a higher population are associated with 100% compliance. Logging and grazing employment predict drift. Having more political overseers does not decrease the likelihood that a district will have 100% of the treatment acreage in priority areas and partisan considerations of the president and his party do not predict priority treatment.

**Conclusion**

In response to a Congressional directive to provide a strategic plan reduce wildland fire risk and restore forest ecosystem health in the interior West, and including the findings of recent GAO reports on the subject (GAO, 1999), the federal government prepared a report in 2000, “Protecting People and Sustaining Resources in Fire-Adapted Ecosystems. A Cohesive Strategy.” These documents concluded that, “the most extensive and serious problem related to the health of national forests in the interior West is the over-accumulation of vegetation.” While the interagency report was a product of the Clinton Administration, it was built upon and expanded in the Bush Administration in the 2001 report, “A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment. 10-Year Comprehensive Strategy.” The strategic plan, referred to as the National Fire Plan reflected an interagency, bipartisan approach to combating the risks of wildfires.

“This strategy reflects the views of a broad cross-section of governmental and nongovernmental stakeholders. It outlines a comprehensive approach to the management of wildland fire, hazardous fuels, and ecosystem restoration and rehabilitation on Federal and adjacent State, tribal, and private forest and range lands in the United States. This strategy emphasizes measures to reduce the risk to communities and the environment and provides an effective framework for collaboration to accomplish this…The end results sought by all stakeholders are healthier watersheds, enhanced community protection, and diminished risk and consequences of severe wildland fires.”

---

5 Congress directed the Secretaries of the Interior and Agriculture to work with the Governors to develop this strategy in the FY 2001 Interior and Related Agencies Appropriations Act (P.L. 106-291). The direction requires “close collaboration among citizens and governments at all levels,” which, by extension, includes a geographically diverse group of people, representing all levels of government, tribal interests, conservation and commodity groups, and community-based restoration groups.
Thus, the plan represents a set of bipartisan goals with measurable outcomes that was held in common across different Administrations. The plan specified priority sites for treatments, and as a result, when district rangers and their supervisors selected acreage for treatment outside of these previously identified sites, their selection of low priority sites for treatments instead of priority targets is transparent and unambiguous.

Analysts frequently explain the management of government programs as resulting from asymmetric information, in which principals are unable to effectively appraise program performance of agents (Dixit, 2002). As a result, the agents have a free hand, when the principal cannot effectively supervise agents in their day-to-day program operations (Eisenhardt, 1989). Ordinarily, Congress and the White House may have a difficult time evaluating the Forest Service’ performance in implementing public sector program goals due to their complexity, the level of environmental noise, and the agency’s structure, consisting of long information chains, and dispersed personnel units. However, for the implementation of the National Fire Plan, the goal is unambiguous. Funds with the purpose of hazardous fuels reduction should be targeted toward priority sites. In this case, those areas in the WUI or where fires occur regularly (0-35 years) and the ecosystem is considered to be deviated form its natural state.

Based on the agency’s own specification we were able to track when agencies choose pork over priority. One definition of pork is when Congress or federal agencies choose lower priority spending, when higher-valued projects are available. Our approach allows us to evaluate when district rangers choose lower priority treatment projects.

We evaluate how the Forest Service allocates program resources even as the macro-level political environment changes. We assess the relative impacts of both the changes in the partisan
majority in Congress and the micro-level preferences of ranger districts’ particular Congressional members.

We found that politics mattered and the Forest Service was particularly responsive to changes in partisan control of Congress. After the 2006 Congressional election, Republican districts received fewer non-priority treatments. This implies the Democratic majority imposed a low pork diet for the now minority districts. We also found that, even though Presidents generally don’t target their co-partisans, after years of Republican presidential rule, the Congress with its newly established Democratic President seemed to have had a pent-up demand for pork, as a result, the Democratic districts received an extra helping.
Appendix 1

The primary goals of the 10-Year Comprehensive Strategy are: 1. Improve Prevention and Suppression 2. Reduce Hazardous Fuels 3. Restore Fire Adapted Ecosystems 4. Promote Community Assistance. Subsequently the agencies measurable outcomes and annual performance measures to evaluate progress in accomplishing the strategic plan’ goals.

Goal Two - Reduce Hazardous Fuels

Implementation Outcome: Hazardous fuels are treated, using appropriate tools, to reduce the risk of unplanned and unwanted wildland fire to communities and to the environment.

Performance Measures

a) Number of acres treated that are 1) in the Wildland Urban Interface or 2) in condition classes 2 or 3 in fire regimes 1, 2, or 3 outside the wildland urban interface, and are identified as high priority through collaboration consistent with the Implementation Plan, in total, and as a percent of all acres treated.

b) Number of acres treated per million dollars gross investment in Measures a. 1) and a. 2) respectively.

c) Percent of prescribed fires conducted consistent with all Federal, State, Tribal and local smoke management requirements.

Goal Three - Restore Fire-adapted Ecosystems

Implementation Outcome: Fire-adapted ecosystems are restored, rehabilitated and maintained, using appropriate tools, in a manner that will provide sustainable environmental, social, and economic benefits.

Performance Measures

a) Number of acres in fire regimes 1, 2, or 3 moved to a better condition class, that were identified as high priority through collaboration consistent with the Implementation Plan, in total, and as a percent of total acres treated.

b) Percent of acres degraded by wildland fire with post-fire rehabilitation treatments underway, completed, and monitored.

c) Number of acres in Measure a. moved to a better condition class per million dollars of gross investment.

http://www.forestsandrangelands.gov/resources/plan/index.shtml
References


Elmore, Richard F. 1979 "Backward Mapping: Implementation Research and Policy


Figure 1: Distribution of percent Priority Treatments by District-Year

Distribution of Percent Priority Treatments by District-Year

Frequency

% Priority Acres

0 20 40 60 80 100
Table 1: Summary Statistics

<table>
<thead>
<tr>
<th>Statistic</th>
<th>N</th>
<th>Mean</th>
<th>St. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Priority Acreage Treated</td>
<td>3,379</td>
<td>82.019</td>
<td>29.253</td>
<td>0.000</td>
<td>100.000</td>
</tr>
<tr>
<td>Republican</td>
<td>3,379</td>
<td>0.879</td>
<td>0.326</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td># Members of Congress</td>
<td>3,379</td>
<td>4.316</td>
<td>1.557</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Appropriations</td>
<td>3,379</td>
<td>0.385</td>
<td>0.487</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Important Committee Members</td>
<td>3,379</td>
<td>2.478</td>
<td>1.215</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Mean Rank of MCs</td>
<td>3,379</td>
<td>13.655</td>
<td>7.879</td>
<td>1.000</td>
<td>37.000</td>
</tr>
<tr>
<td>Most MCs Share Party of President</td>
<td>3,379</td>
<td>0.486</td>
<td>0.500</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Closest Voteshare to 50</td>
<td>3,379</td>
<td>41.210</td>
<td>7.885</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>Logging Employment</td>
<td>3,379</td>
<td>26.003</td>
<td>37.365</td>
<td>0</td>
<td>279</td>
</tr>
<tr>
<td>NRDC</td>
<td>3,379</td>
<td>9.490</td>
<td>4.571</td>
<td>1</td>
<td>34</td>
</tr>
<tr>
<td>Cattle Employment</td>
<td>3,379</td>
<td>38.127</td>
<td>48.920</td>
<td>0</td>
<td>375</td>
</tr>
<tr>
<td>% White</td>
<td>3,379</td>
<td>86.802</td>
<td>9.980</td>
<td>25.923</td>
<td>97.634</td>
</tr>
<tr>
<td>Total Population</td>
<td>3,379</td>
<td>29,757.030</td>
<td>24,459.860</td>
<td>2,415</td>
<td>273,091</td>
</tr>
</tbody>
</table>
Table 2: Predictors of % Priority

<table>
<thead>
<tr>
<th>Dependent variable:</th>
<th>% Priority</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Main</td>
<td>District FE</td>
<td>Year FE</td>
</tr>
<tr>
<td>Members of Congress</td>
<td>−1.278***</td>
<td>−8.255***</td>
<td>−1.334***</td>
</tr>
<tr>
<td></td>
<td>(0.410)</td>
<td>(3.004)</td>
<td>(0.414)</td>
</tr>
<tr>
<td>Post 2006</td>
<td>−2.958</td>
<td>−1.947</td>
<td>−4.883</td>
</tr>
<tr>
<td></td>
<td>(3.676)</td>
<td>(3.400)</td>
<td>(5.150)</td>
</tr>
<tr>
<td>Republican</td>
<td>0.168</td>
<td>−4.957</td>
<td>0.262</td>
</tr>
<tr>
<td></td>
<td>(3.366)</td>
<td>(3.838)</td>
<td>(3.378)</td>
</tr>
<tr>
<td>Republican X 2006</td>
<td>7.698**</td>
<td>8.059**</td>
<td>8.523**</td>
</tr>
<tr>
<td></td>
<td>(3.700)</td>
<td>(3.428)</td>
<td>(3.722)</td>
</tr>
<tr>
<td>Appropriations</td>
<td>1.506</td>
<td>1.326</td>
<td>1.815*</td>
</tr>
<tr>
<td></td>
<td>(1.076)</td>
<td>(1.194)</td>
<td>(1.077)</td>
</tr>
<tr>
<td>Important Committee</td>
<td>−0.829</td>
<td>1.057</td>
<td>−0.937*</td>
</tr>
<tr>
<td></td>
<td>(0.544)</td>
<td>(0.850)</td>
<td>(0.546)</td>
</tr>
<tr>
<td>Rank</td>
<td>0.043</td>
<td>−0.119*</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.072)</td>
<td>(0.068)</td>
</tr>
<tr>
<td>MCs Party of Pres</td>
<td>3.986**</td>
<td>4.601***</td>
<td>4.298*</td>
</tr>
<tr>
<td></td>
<td>(1.685)</td>
<td>(1.588)</td>
<td>(2.473)</td>
</tr>
<tr>
<td>MCs Party of PresX2009</td>
<td>−6.006</td>
<td>−8.352**</td>
<td>−6.898</td>
</tr>
<tr>
<td></td>
<td>(3.778)</td>
<td>(4.080)</td>
<td>(4.310)</td>
</tr>
<tr>
<td>Post 2009</td>
<td>5.672*</td>
<td>7.867**</td>
<td>3.860</td>
</tr>
<tr>
<td></td>
<td>(3.354)</td>
<td>(3.509)</td>
<td>(4.548)</td>
</tr>
<tr>
<td>Closest Voteshare to 50</td>
<td>0.110</td>
<td>−0.002</td>
<td>0.138*</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.073)</td>
<td>(0.072)</td>
</tr>
<tr>
<td>Logging Employment</td>
<td>−0.042***</td>
<td>−8.432***</td>
<td>−0.041***</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(3.310)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>NRDC</td>
<td>0.372***</td>
<td>−119.886**</td>
<td>0.371***</td>
</tr>
<tr>
<td></td>
<td>(0.144)</td>
<td>(47.147)</td>
<td>(0.144)</td>
</tr>
<tr>
<td>Cattle Employment</td>
<td>−0.046***</td>
<td>10.742**</td>
<td>−0.047***</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(4.339)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Percent White</td>
<td>−0.278***</td>
<td>8.957**</td>
<td>−0.288***</td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td>(3.640)</td>
<td>(0.054)</td>
</tr>
<tr>
<td>Total Population</td>
<td>0.0001***</td>
<td>0.056**</td>
<td>0.0001***</td>
</tr>
<tr>
<td></td>
<td>(0.0003)</td>
<td>(0.022)</td>
<td>(0.0003)</td>
</tr>
<tr>
<td>Constant</td>
<td>99.888***</td>
<td>−529.963**</td>
<td>101.283***</td>
</tr>
<tr>
<td></td>
<td>(5.855)</td>
<td>(266.838)</td>
<td>(6.363)</td>
</tr>
</tbody>
</table>

Observations 3,379 3,379 3,379
R² 0.054 0.352 0.064
Adjusted R² 0.049 0.274 0.057
F Statistic 11.948*** 4.526*** 9.212***

Note: *p<0.1; **p<0.05; ***p<0.01
Table 3: Robustness Checks

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>logistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Priority&lt;100</td>
<td>0:&lt;100; 1: 100</td>
</tr>
<tr>
<td>Members of Congress</td>
<td>-14.531***</td>
<td>-0.048</td>
</tr>
<tr>
<td></td>
<td>(5.379)</td>
<td>(0.030)</td>
</tr>
<tr>
<td>Post 2006</td>
<td>5.156</td>
<td>-0.859***</td>
</tr>
<tr>
<td></td>
<td>(5.533)</td>
<td>(0.277)</td>
</tr>
<tr>
<td>Republican</td>
<td>-16.463***</td>
<td>-0.238</td>
</tr>
<tr>
<td></td>
<td>(6.150)</td>
<td>(0.253)</td>
</tr>
<tr>
<td>Republicanx2006</td>
<td>11.632**</td>
<td>0.271</td>
</tr>
<tr>
<td></td>
<td>(5.654)</td>
<td>(0.278)</td>
</tr>
<tr>
<td>Appropriations</td>
<td>0.914</td>
<td>0.186**</td>
</tr>
<tr>
<td></td>
<td>(1.754)</td>
<td>(0.080)</td>
</tr>
<tr>
<td>Important Committee</td>
<td>1.024</td>
<td>-0.015</td>
</tr>
<tr>
<td></td>
<td>(1.230)</td>
<td>(0.040)</td>
</tr>
<tr>
<td>Rank</td>
<td>-0.047</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.110)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>MCs Party of Pres</td>
<td>6.619***</td>
<td>0.146</td>
</tr>
<tr>
<td></td>
<td>(2.292)</td>
<td>(0.126)</td>
</tr>
<tr>
<td>MCs Party of PresX2009</td>
<td>-19.477***</td>
<td>0.026</td>
</tr>
<tr>
<td></td>
<td>(6.173)</td>
<td>(0.288)</td>
</tr>
<tr>
<td>Post 2009</td>
<td>19.577***</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>(5.430)</td>
<td>(0.258)</td>
</tr>
<tr>
<td>Closest Voteshare to 50</td>
<td>0.034</td>
<td>0.008</td>
</tr>
<tr>
<td></td>
<td>(0.109)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Logging Employment</td>
<td>-15.061***</td>
<td>-0.007***</td>
</tr>
<tr>
<td></td>
<td>(5.334)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>NRDC</td>
<td>-214.516***</td>
<td>0.027**</td>
</tr>
<tr>
<td></td>
<td>(75.796)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Cattle Employment</td>
<td>19.697***</td>
<td>-0.002**</td>
</tr>
<tr>
<td></td>
<td>(7.029)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Percent White</td>
<td>16.247***</td>
<td>-0.026***</td>
</tr>
<tr>
<td></td>
<td>(5.908)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Total Population</td>
<td>0.100***</td>
<td>0.00001***</td>
</tr>
<tr>
<td></td>
<td>(0.036)</td>
<td>(0.00000)</td>
</tr>
<tr>
<td>Constant</td>
<td>-1,053.888***</td>
<td>1.968***</td>
</tr>
<tr>
<td></td>
<td>(431.615)</td>
<td>(0.446)</td>
</tr>
<tr>
<td>Observations</td>
<td>3,985</td>
<td>3,379</td>
</tr>
<tr>
<td>R^2</td>
<td>0.456</td>
<td></td>
</tr>
<tr>
<td>Adjusted R^2</td>
<td>0.343</td>
<td></td>
</tr>
<tr>
<td>Akaike Inf. Crit.</td>
<td>4,339.511</td>
<td></td>
</tr>
</tbody>
</table>

*Note: p<0.1; **p<0.05; ***p<0.01