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Make it burn? Wildfires, disaster aid and presidential approval

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HWWI WORKING PAPER SERIES

Make it Burn?

Wildfires, Disaster Aid and Presidential Approval

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Hamburgisches
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HWWI WORKING PAPER NO. 2/2024

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Make it Burn? Wildfires, Disaster Aid and Presidential Approval

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Abstract

For governments, the occurrence of natural disasters creates the opportunity to demonstrate their willingness and competence in providing prompt and efficient disaster aid. A number of studies has investigated the political consequences of providing disaster aid by analyzing the effects of such aid on subsequent election results. However, the findings of these studies have not yielded a coherent picture. This paper makes a contribution to the existing literature by employing high-frequency survey data on presidential approval. The combination of this data with wildfire data and information on Federal Emergency Management Agency (FEMA) aid approvals and denials reveals that Barack Obama gained in support among (potential) voters for whom FEMA aid was approved by the president, while he was not punished for denials of FEMA assistance. We show that this effect is exclusively driven by voters without party affiliation and that the effect is temporary.

Keywords: Presidential approval, natural disasters, wildfires, disaster aid, disaster declarations, FEMA

Disasters are very political events

James Lee Witt, 1996

1 Introduction

In democracies, politicians are tied to the voters' preferences. It is a well established fact that both partisan as well as opportunistic politicians have incentives to pursue policies which maximize their chances to be reelected (Mueller 2003). In "normal" times politicians mostly realize the political programs they promoted in the election campaigns or which they negotiated in coalition agreements. There is also ample evidence that politicians are willing to distribute election gifts whenever the polls signal close election outcomes (Gallego, Guardado, and Wantchekon 2023). Moreover, politicians might try to manipulate the timing of their policies in a way maximizing their reelection chances (Brender and Drazen 2013).

In "unusual" times politicians sometimes get additional opportunities to boost electoral support. An example for such an opportunity is the occurrence of a natural disaster. Especially in highly developed countries, disasters often not only cause physical harm, but also serious material losses. For politicians, disasters create the possibility to proof their willingness and ability to provide quick, generous and efficient disaster management (Gasper 2015). Success in this matter might significantly increase reelection chances. At the same time disasters come at the risk that the voter learns about poor disaster management abilities of the incumbent (Cole, Healy, and Werker 2012).

There is some empirical evidence indicating that governments in fact try to use disaster aid payments to increase their election prospects. Healy and Malhotra (2003) find that citizens are more sensible to post-disaster help than to pre-disaster prevention measures. Voters tend not to reward prophylactic expenditures before disasters, however react to federal aid after disasters occurred. Garrett and Sobel (2003) show that U.S. presidents more often issue disaster declarations in U.S.

states with higher electoral importance. As a disaster declaration is the necessary prerequisite for receiving disaster help from the Federal Emergency Management Agency (FEMA) funds, these declarations are an important channel through which the U.S. president can affect disaster help. Gasper (2015) shows that in general the likelihood that a disaster declaration is rejected by the U.S. president negatively depends on the amount of the occurring damages. However, in election years, presidents tend to use lower threshold levels for denials in states with close elections. Schneider and Kunze (2023) find that disaster declaration decisions are unbiased when hurricanes are either very strong or weak. However, when hurricanes are of medium intensity, disaster declaration decisions are biased, with areas governed by co-partisans receiving up to twice as many declarations.

However, even when politicians attempt to use disaster aid as a means of influencing election outcomes it is not clear whether these attempts prove to be successful. A few papers report on successful attempts to influence election results. An example is the paper by Bechtel and Hainmueller (2011), which studies the case of the August 2002 flood in Saxony (Germany) only a few weeks before a German federal election. The paper documents that the then Chancellor Gerhard Schröder quickly visited the affected regions and promised and organized generous financial support by the Federal Government (well above the damages which factually occurred). As a consequence, his party got a 7 percentage points higher electoral support in the affected regions, which helped to win the following 2002 federal elections. And even in the subsequent federal election (4 years later) the electoral support for the former chancellor's party was significantly higher in affected regions. Another example is the study by Chen (2013), which is concerned with voter turnout and electoral choice in Florida before and after an intense hurricane season. By comparing individual voters' turnout in the 2002 (pre-hurricane) and 2004 (post-hurricane) elections Chen (2013) finds that the awarding of FEMA aid increased the incumbent party's voters' turnout (Republican). At the same time the turnout of voters of the challenging party (Democrats) decreased. Moreover, the study finds that President Bush's vote share in the 2004 presidential election is positively related to the amount of FEMA help given to an electoral precinct.

Single event studies come with the problem that it is hard to judge whether the findings can be generalized in a meaningful way. Other analyses have therefore engaged in multi-event studies. Cole, Healy, and Werker (2012) use electoral data on India over the period of 1977 to 1999 and combine the data with information on rainfall and disaster relief. They find that voters tend to punish the incumbent for the occurrence of rainfall events, but less so, when the government responds vigorously by delivering disaster aid. Other prominent examples for this literature are Healy and Malhotra (2003) and Gasper and Reeves (2011), who deliver more systematic analyses by studying the political reactions to a wide range of severe weather events which occurred in the United States. Both studies base their analysis on data from the Spatial Hazard Events and Losses Database for the United States (SHELDUS), collected by the Hazards and Vulnerability Institute at the University of South Carolina. While using differing estimation approaches, both papers conclude that voters reward the governing party for delivering disaster relief spending. However, this strong result has been challenged more recently by Gallagher (2023), who argues that these findings are primarily due to the way missing data in the SHELDUS database is handled.

As outlined before, the existing literature is almost exclusively based on election data. Most likely this is due to the fact that election data on the aggregated level is often easily accessible. While election data comes at the advantage that it is based on the electorate's factual behavior, its major disadvantage is that elections are conducted only rarely. Moreover, voting behavior on the individual level can typically not be observed. It is thus not easy to match electoral behavior to disaster events and aid payments. To overcome these problems, our study is based on high-frequency (daily) geo-referenced survey data on U.S. presidential approval. Due to data availability we restrict our analysis to the presidency of Barack Obama (2009 to 2017). As different disaster types might have different effects we concentrate on wildfires in this paper, a highly destructive

sort of natural disasters. Rather than using fire damage information from secondary databases we use fire maps as indicators of fire severity. Our main focus is the analysis of voters' reactions to approvals or disapprovals of FEMA aid. We find that voters in the affected regions are more likely expressing satisfaction with the way president Obama did his job in the case of approvals whereas there is no negative effect for the case of denials. However, we show that this effect is almost exclusively driven by voters with no party preference. Moreover, the effect turns out to be temporary.

The paper is organized as follows. The second section explains the procedure which is applied to grant FEMA support to regions which were hit by natural disasters or extreme weather events. The third section introduces the employed data and delivers some summary statistics. Section 4 delivers the estimation approach, the main estimation results and the results of various stability tests. In section 5 we study which voter groups drive the results. Section 6 is concerned with the question of the longevity of the effect. The final section 7 summarizes the main results and draws conclusions.

2 Approval of FEMA Grants

Whenever a disaster strikes a certain region of the U.S. there is a well-defined (although quite complicated) process set out by law for the steps that must be taken to receive government assistance. The Disaster Relief Act of 1974, which governs the process after a hazardous incident, was replaced in 1988 by the Robert T. Stafford Disaster Relief and Emergency Assistance Act¹. As Reeves (2011) argues, the Stafford Act led to a substantial increase of federal funding and strengthened presidential authority in the disaster relief process.

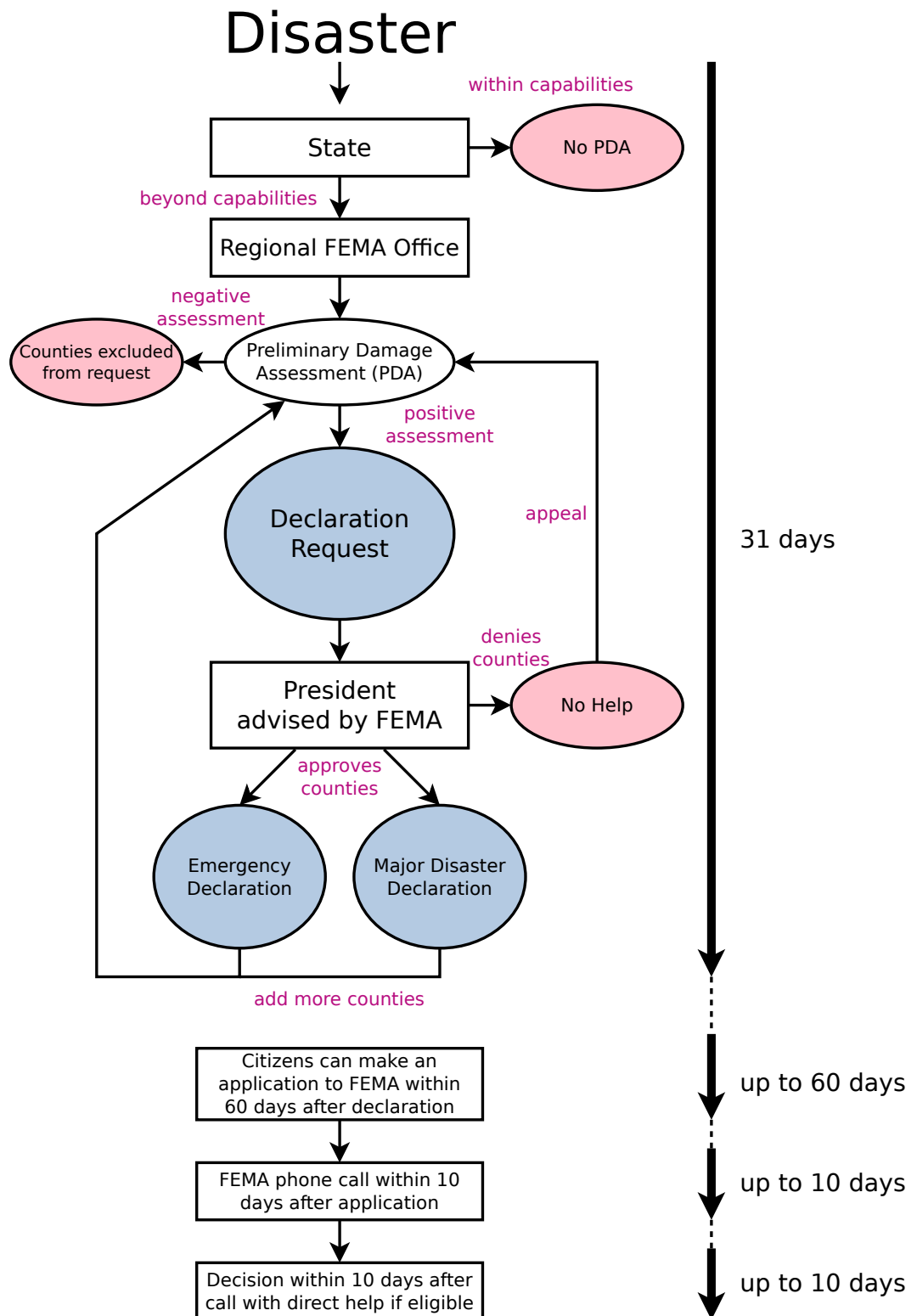
In principle, the U.S. constitution defines three emergency aid programs: (i) Emergency Declarations, (ii) Major Disaster Declarations and (iii) Fire Management Assistance Grants (FMAG). In all three cases, the state hit by a fire must submit a request for federal help if the mitigation or reconstruction measures are expected to exceed the state's capabilities. The FMAG program is limited to fire incidents only, whereas the other two programs also apply to other natural or man-made catastrophic events (such as hurricanes, floods, acts of terrorism, etc.). However, they differ significantly with regard to their request procedure (see Figure 1). It is the governor who is responsible for submitting requests through a first contact with the responsible regional FEMA office.² For each county in the affected state a Preliminary Damage Assessment (PDA) is conducted by the county executive together with local, state and FEMA officials. The assessment teams collect information on the disaster, including its extent, impact on individuals and public facilities, necessary types of help and insurance coverage. Affected counties obviously have an incentive to become eligible for federal aid by receiving a positive assessment result and the inclusion of the damage report in the governor's request. In addition to the PDA, the governor must include a report on the successful activation of emergency actions according to state law. This includes also information on the measures already implemented to mitigate the disaster impacts and the resources consumed.

Following the assessment, the governor submits a request for a disaster declaration to the White House. The president then decides about an approval or denial with advice from FEMA officials. Typically, the PDA is conducted before the declaration request is submitted. However, in cases of extreme severity, the submission may occur prior to the PDA. From 2009 to 2017, it took an average of 31 days from the start of a fire incident to the declaration of an emergency or major disaster.³ Solely the president has the authority to declare an emergency disaster or a major

1. PL 100-707, signed into law November 23, 1988.

2. The continental United States and territories are distributed over ten regional FEMA offices across the US.

3. The approval time is derived from the official FEMA database of approved disaster declarations ([Federal Emergency Management Agency 2023b](#)).



Note: The average time from disaster to its declaration is calculated with FEMA reported dates of incident begin and declaration announcement day encompassing only fire incidents within 2009-2017. Application duration times are taken from official FEMA guidelines.

Figure 1. Disaster declaration process in the US.

disaster, depending on the severity of the situation and the requested aid.⁴

An emergency declaration is limited to a federal assistance of \$5 million and a cost-sharing rate of 75/25, where 75% of the cost is borne by the federal government and 25% by the state. This rate can be increased up to 100% if necessary. An example for such a case occurred on 15 March 2022, when President Biden signed an exceptional decree⁵ throughout the COVID-19 crisis. An emergency declaration is the only type of assistance that can be granted ahead of an imminent disaster and includes Public Assistance of type A and B, which includes debris removal and emergency protective measures and is designated to restore public infrastructure. Additionally, it is possible to activate the Individual and Household Program for individual assistance with a federal cost share of 100%. However, the different types of assistance can only be granted if they are mentioned in the submitted disaster request.

A major disaster declaration can exceed the amount of the emergency declaration, depending on what is requested in the PDA. The full range of Public Assistance of type A to G can be provided, including assistance for i.e. traffic, water control and utilities. In addition, individual assistance is provided not only through the Individual and Household Program, but also through five other types of assistance programs, such as disaster case management, legal services or unemployment assistance. Separate from public and individual assistance, this type of declaration also makes it possible to apply for the Hazard Mitigation Grant Program which intends to reduce potential risks to life or property from natural hazards.

Experience shows that governors tend to include as many counties as possible in the federal disaster assistance program. However, the president may deny a request completely or declare a disaster that excludes several counties from the request. This happened, for example, during the severe fires in Texas in April 2011, when Governor Perry requested a major disaster declaration for 252 out of 254 counties. The request was initially denied in its entirety, but was later approved for 45 counties, sparking a fierce political battle.⁶ In the event of a (partial) denial, the governor then has the opportunity to file a legal appeal within 30 days after the declaration in order to resubmit the excluded counties with more information on the level of damage gathered in the PDA. Within 30 days after the declaration or after the incident, the governor may also add new counties to the Public or Individual Assistance Program. The opportunity of adding more counties to the assistance program often leads to local officials submitting many resource needs to the state and citizens encountered to report any damage so that the county reaches eligibility for federal funding. Once a disaster has been declared, citizens can apply to FEMA for individual assistance such as low-interest disaster loans, reimbursements or grants. Individuals must submit applications within 60 days after the declaration was announced. Within 10 days after application, FEMA asks for detailed information about the disaster damage and it takes up to another 10 days before the applicant is informed on the final decision on federal assistance. If so, the decision letter also includes an U.S. treasury check or direct deposits⁷ that affected homeowners can use to immediately improve their situation.

3 Data

In order to study whether disaster declarations in the context of occurring wildfires have a systematic impact on presidential popularity, we use three different sources of data: popularity data, data on

4. Various factors might influence the president's decision (Gasper 2015). The Stafford Act does not come up with specific thresholds for the damage or the extent of the disaster to be considered as an emergency case. Thus, the president has considerable discretion here and might adjust the applied thresholds to current political pressures resulting e.g. from upcoming elections. The study by Gasper (2015) indeed finds a negative relationship between the damage occurring in a county with close election results and the likelihood of denying a declaration request during election years.

5. H.R. 2471, Consolidated Appropriations Act, March 15 2022.

6. The citizens' perceptions of this divided federalism are discussed e.g. in Brown (2010).

7. Application details are taken from FEMA application guidelines for U.S. citizens.

occurring wildfires and data on disaster declarations. In the following we explain the data in detail and deliver some descriptive statistics.

3.1 Popularity Data

The popularity data, we employ in this study, comes from the Gallup Daily tracking survey (Gallup 2010-2017). The Gallup Company interviews at least 1,000 U.S. adults daily (350 days per year) on different aspects of well-being, economics and politics. The survey represents more than 95% of the U.S. adult population. The survey includes standard demographic information such as gender, age and educational achievements. However, it also comes with spatial information on the place of living of the respondents on the zip code level. This allows combining the survey data to other sorts of geocoded data. Within the "Politics and Economy" track of the survey, respondents also answer questions on their political views and their economic situation. This track includes a question on the judgment of the performance of the current president, which reads as

"Do you approve or disapprove of the way [the current president] is handling his job as president?"

Possible responses include 'Approve', 'Disapprove', 'Don't know', and 'Refuse'. We code the answer as a binary variable which turns one in case of an approval, zero in case of a disapproval and NA in case of the other possible outcomes. While this question has already been asked for decades, the answers on the individual level are not available before 2008. For this project, data was available for the period of 2008 until 2019. For most of this period, Barack Obama served as US president.⁸ That is why we restrict our analysis to the Obama presidency. Figure 2 shows the average approval rate of Obama over his presidency on the zip-code level. Over the entire estimation sample, the average approval rate of Barack Obama amounted to 47%.

In our subsequent empirical analysis we employ a broad set of socioeconomic control variables. All these variables also come from the Gallup Survey. In detail, we control for age, gender and race. We also add information on the highest completed level of education and the employment status (employed, unemployed, not in the work force). Furthermore, we include income information, which is available in the form of membership in certain income classes (ranging from less than \$720 up to \$120,000 or more). Besides socio-demographic variables we also use party identification as control variable. Individuals can identify as a Republican, Democrat, affiliated with an other party or as independent.

Summary statistics for the employed control variables over the estimation period are shown in Table 1.

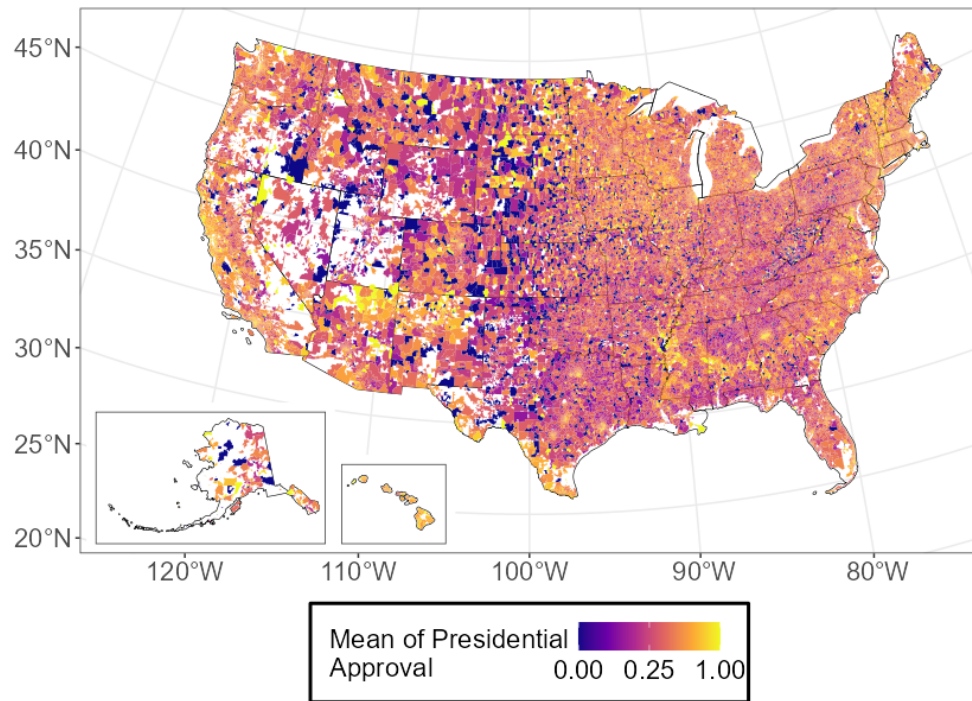
3.2 Wildfire Data

The employed wildfire data was extracted from the Monitoring Trends in Burn Severity (MTBS) program (MTBS Project, USDA Forest Service/U.S. Geological Survey 2023). The MTBS maps the location, extent and burn severity of all fires from 1984 across the USA (continental United States, Alaska, Hawaii and Puerto Rico) at a 30-meter resolution. The program was implemented in 2005 with the aim to generate geospatial data to assess the environmental impacts of wildland fires, identify trends and estimate the efficiency of the ten-year National Fire Plan. The advantage of the data is its consistency, which is reached by using information from the state federal agencies and organizations as well as Landsat satellite multispectral imagery at a 30-meter resolution.

In the MTBS program, wildfires are defined as

"An unplanned, unwanted wildland fire including unauthorized human-caused fires, es-

8. Obama was inaugurated on 20 January 2009 and served until 19 January 2017, when he was succeeded by Donald Trump.



Note: As Barack Obama was inaugurated on 20 January 2009 and we consider an evaluation period of twelve months our data covers the period from 20 January 2010 to 19 January 2017.

Figure 2. Share of Presidential Approval per zip code over 20 January 2010 to 19 January 2017

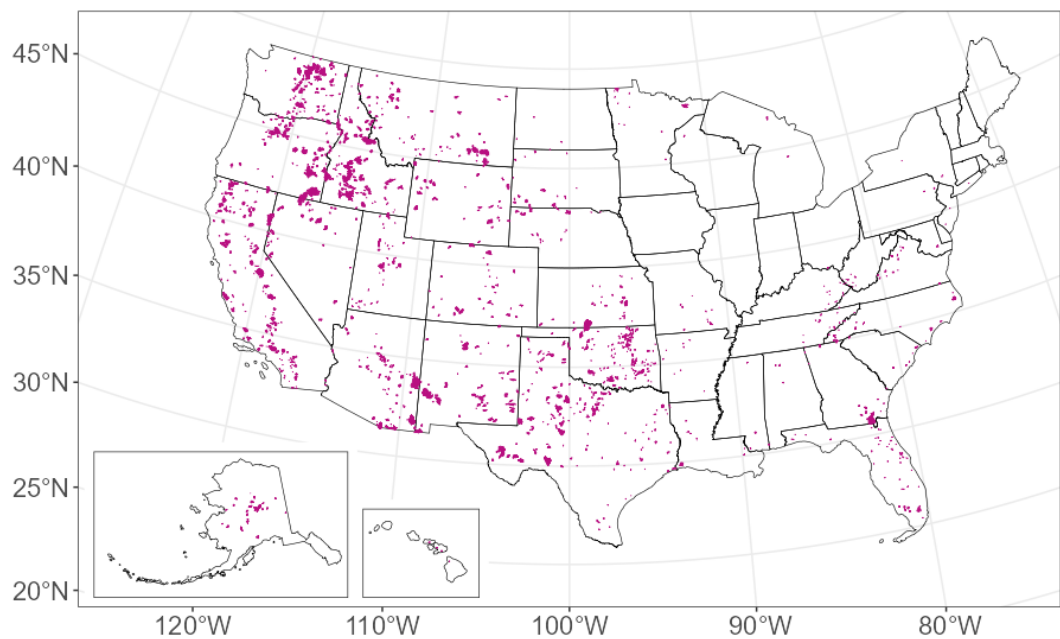


Figure 3. Wildfires within Obama's Presidency (January 20, 2009 and January 19, 2017) with at least 1,000 acres and 1% burned share of ZIP code

Table 1. Summary Statistics of Control Variables

	Mean	St. Dev.	Min	Max
<i>Explanatory variables:</i>				
Female	0.49	0.50	0	1
Age	53.35	17.68	18	99
White	0.80	0.40	0	1
Black	0.09	0.28	0	1
Asian	0.02	0.15	0	1
Hispanic	0.08	0.26	0	1
Other Race	0.02	0.14	0	1
Below High School	0.05	0.21	0	1
High School	0.20	0.40	0	1
Tech School	0.06	0.23	0	1
Some College	0.25	0.43	0	1
Bachelor	0.24	0.43	0	1
Post Grad	0.20	0.40	0	1
Employed	0.61	0.49	0	1
Not in Work Force	0.36	0.48	0	1
Unemployed	0.04	0.19	0	1
Income	6.82	2.30	1	10
Republican	0.31	0.46	0	1
Democrat	0.34	0.47	0	1
Independent	0.34	0.47	0	1
Other Party	0.01	0.10	0	1
Observations	887,540			

caped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out. (MTBS, 2024)"

Besides wildfires, the database also contains two additional categories. The category of "prescribed fires" contains all fires which are intentionally ignited by management actions. Fires not belonging into these two groups are summarized in the category "unknown".

MTBS maps all fires with a size of at least 1,000 acres in the western USA, while in the eastern USA, all fires of at least 500 acres are included due to the high cost of capturing small fires. Nevertheless, MTBS captures around 95% of the burned area. To account for this difference, we exclude all wildfires with a size less than 1,000 acres from our analysis. Moreover, we include only wildfires in our sample whenever their size amount to at least 1% of the zip-code area and thus might be assumed to have affected a significant amount of individuals living in the area. Following this procedure, we end up with a total of 1,491 wildfires which occurred over Obama's Presidency (see Figure 3).

3.3 Disaster Aid Data

Finally, we need information on FEMA disaster aid request and the final decision made by the president for our empirical analysis. We extract this information from two different data sets: the Disaster Declarations Summaries ([Federal Emergency Management Agency 2023b](#)) and the Declaration Denials ([Federal Emergency Management Agency 2023a](#)), both published by FEMA.

The first data set contains all disaster declarations by an U.S. president since 1953 on the county level. However, this source contains lots of different disasters. In order to isolate disaster aid in consequence of an occurring wildfire we only consider incidents classified as 'fire'. Moreover, we exclude all declarations which are classified as 'fire management' (FMAG). We do so for two reasons. First, while the president is legally authorized to provide aid including equipment and grants in case of fire threats,⁹ this authority has been delegated to the FEMA¹⁰. The aim of this delegation is to speed up the process, which is urgently necessary in the case of upcoming fire threats. Second, this sort of disaster help focuses on mitigating, managing, and controlling fires that could potentially result in a major disaster. Whenever successful, these measures prevent fires and are often not even recognized by large parts of the public.

In Figure 4 we mark counties in blue, whenever at least one fire disaster declaration was approved over Obama's Presidency. The disaster approvals concentrate on six US states: Texas, California, Washington, Colorado, Montana and Tennessee.

The Declaration Denials data lists all requests for major disaster declarations and emergency declarations that have been denied in the past. Again we only consider incidents classified as 'fire' and exclude the 'fire management' category. Different from the disaster approval data, this sort of data is available only on the state level. Over Obama's Presidency fire disaster declarations were denied in Texas, California, Washington, Alaska, Arizona and Kansas (see the states marked in red in Figure 4).

4 Estimation Approach and Baseline Results

The aim of our subsequent empirical analysis is to find out whether the provision of federal disaster aid has a systematic effect on presidential popularity. We conduct our analysis in two steps.

In the first step we study whether the occurrence of wildfires in general has a systematic effect on presidential approval. In order to do so we employ the earlier described data and regress presidential approval $PA_{i,j,s,d}$ of individual i in zip code j of state s on day d on a vector of individual-level control variables $X_{i,d}$. This vector contains the respondents' gender, age, level of education,

9. Sec. 420. Fire Management Assistance (42 U.S.C. 5187)

10. Code of Federal Regulations, 44 CFR Part 204

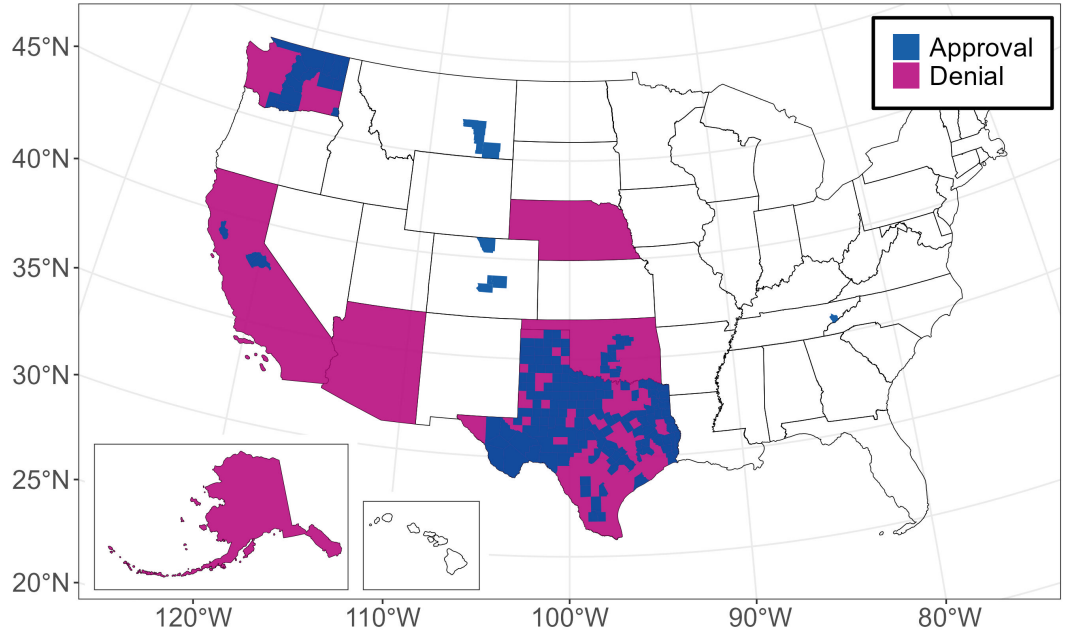


Figure 4. Disaster Declarations and Denials within Obama's Presidency (January 20, 2009 and January 19, 2017)

income and political orientation. Moreover, we include the variable $WF_{j,d}$, which indicates whether the zip code, the individual lives in, was affected by a wildfire over the 12 months preceding the interview date.¹¹ As the left-hand variable is binary, we use a linear probability model, which allows us accounting for unobserved regional and year-specific heterogeneity by adding year-by-state and zip-code fixed effects ($\delta_{y,s}$ and η_j), with y being the year of the interview. Thus, the equation to be estimated using the ordinary least squares (OLS) method is

$$PA_{i,j,s,d} = \theta X_{i,d} + \alpha WF_{j,d} + \delta_{y,s} + \eta_j + \epsilon_{i,j,s,d} \quad (1)$$

with $\epsilon_{i,j,s,d}$ being the unexplained residual.

The left part of Table 2 reports the estimation results for equation 1. Most of the employed control variables turn out to have significant effects on President Obama's approval rate. Among female respondents the president has higher approval rates than among male respondents. Age turns out to have a u-shaped effect with younger and older individuals showing larger support than individuals in the middle of their lives. Unemployed individuals turn out to have a lower probability to declare that the president does a good job than employed respondents. More education goes along with higher probabilities to approve the way the president is doing his job. The opposite holds true for income classes: higher income goes along with less approval. Among black, Asian and Hispanic respondents Obama has more support than under white respondents. Finally and not too surprising, there is a strong effect of reported party affiliation on approval rates. Democrats and independent individuals have a systematically higher probability to report satisfaction with the way Obama handles his job as Republicans. However, the coefficient of the variable of central interest, the dummy variable indicating whether a wildfire occurred in the referring zip-code over

11. In our baseline specification we opt for a somewhat limited time frame of 12 months as earlier research points into the direction that effects of natural disasters and disaster aid on election results are somewhat transitory (see e.g. Bechtel and Hainmueller 2011). In Section 5 we study the longevity of the effects in some more detail.

the 12 months preceding the interview, turns out to be not significantly different from zero in this specification. Thus, the bare occurrence of a wildfire turns out to be without systematic effect on the president's popularity.

One reason why we do not find any effect of the occurrence of wildfires on presidential popularity might be that the effect depends on how the president reacts to requests of FEMA aid by the responsible governors. As it is finally the president, who approves or disapproves the requests, one might speculate that approvals rise presidential popularity while denials reduce it. In order to study this question we have to properly distinguish between three different scenarios whenever wildfires occur. First, it might happen that a wildfire occurs, but the governor in charge does not file a request for FEMA aid. In this case the president is not involved at all. Second, it might happen that a wildfire occurs, the responsible governor files a request and the president rejects to declare a disaster case. And third, the aid request might be approved by the president.

In order to distinguish these three cases, we generate three additional dummy variables. The first dummy, $APP_{j,d}$, is defined to be one whenever the zip-code experienced a wildfire over the preceding 12 months and is located in a county for which a disaster aid request was approved over the preceding 12 months and zero otherwise. In our dataset, we have a total of 519 individuals which experienced a federal disaster aid approval. The second dummy, $DEN_{j,d}$, is set to one whenever the zip-code experienced a wildfire over the preceding 12 months and is located in a state for which a disaster aid request was denied over the preceding 12 months. This case of federal disaster aid denials occurs for 450 respondents in our dataset. Finally, the third dummy, $WWR_{j,d}$ is set to one whenever the zip-code experienced a wildfire over the preceding 12 months but is not within a state for which a disaster aid request was denied or in a county for which a disaster aid request was approved. The case of occurring fires which not led to a request of FEMA disaster aid was experienced by as many as 3,972 individuals in our dataset. The rest of the respondents was not affected by wildfires at all.

Exchanging the former wildfire dummy against these three additional dummies, the estimation equation now reads

$$PA_{i,j,s,d} = \theta X_{i,d} + \alpha WWR_{j,d} + \beta DEN_{j,d} + \gamma APP_{j,d} + \delta_{y,s} + \eta_j + \epsilon_{i,j,s,d} \quad (2)$$

The right part of Table 2 shows the results when estimating equation 2 using the ordinary least squares method. The estimation results for the control variables remain almost unchanged. As expected, we find no significant effect of occurring wildfires which not led to a request for FEMA aid. As the president has no possibility of granting assistance if no disaster declaration request is submitted by the referring governor, remaining inactive does not cause any harm to the president's popularity. We also do not find a systematic effect of a disaster declaration denial on presidential approval. While the estimated coefficient of DEN turns out to be negative, it appears not to be statistically different from zero. Thus, the respondents seem not to punish presidents which deny disaster aid requests. However, we find a positive and significant effect of approvals of request for FEMA aid. Individuals living in a zip code affected by a wildfire, for which a disaster declaration has been approved over the year preceding the interview have a 4.3 percentage points higher probability to approve the way President Obama is handling his job. This result indicates that in fact US presidents can boost their public support by approving requests for federal disaster aid.

To validate our results we conduct various stability tests, which are summarized in Table 3. In a first stability test (see first column of Table 3) we restrict our sample to zip codes for which we have at least two observations per year. By doing so we aim at increasing the accuracy of the estimated fixed effects. As described in section 2 a disaster declaration defines which counties are eligible for receiving disaster assistance on the county level. However, in some of the counties our data indicates that no fire occurred there. In a second stability test we therefore mark only those zip

Table 2. Effect of Wildfires and Disaster Declarations on Presidential Approval

	(1)		(2)	
Age	-0.007***	(0.000)	-0.007***	(0.000)
Age square	0.000***	(0.000)	0.000***	(0.000)
Female	0.025***	(0.001)	0.025***	(0.001)
Unemployed	-0.018***	(0.002)	-0.018***	(0.002)
Not in Work Force	0.010***	(0.001)	0.010***	(0.001)
Below High School	Reference Category		Reference Category	
High School	-0.003	(0.002)	-0.003	(0.002)
Tech School	-0.008***	(0.003)	-0.008***	(0.003)
Some College	0.007***	(0.002)	0.007***	(0.002)
Bachelor	0.039***	(0.003)	0.039***	(0.003)
Post Grad	0.085***	(0.003)	0.085***	(0.003)
Income Class 1	Reference Category		Reference Category	
Income Class 2	0.022***	(0.006)	0.022***	(0.006)
Income Class 3	0.012***	(0.004)	0.012***	(0.004)
Income Class 4	-0.001	(0.004)	-0.001	(0.004)
Income Class 5	-0.007*	(0.004)	-0.007*	(0.004)
Income Class 6	-0.008**	(0.004)	-0.008**	(0.004)
Income Class 7	-0.007*	(0.004)	-0.007*	(0.004)
Income Class 8	-0.007*	(0.004)	-0.007*	(0.004)
Income Class 9	-0.009**	(0.004)	-0.009**	(0.004)
Income Class 10	-0.011***	(0.004)	-0.012***	(0.004)
White	Reference Category		Reference Category	
Black	0.246***	(0.002)	0.246***	(0.002)
Asian	0.128***	(0.003)	0.128***	(0.003)
Hispanic	0.112***	(0.002)	0.112***	(0.002)
Other Race	0.039***	(0.003)	0.039***	(0.003)
Republican	Reference Category		Reference Category	
Democrat	0.682***	(0.001)	0.682***	(0.001)
Independent	0.305***	(0.001)	0.305***	(0.001)
Other Party	0.179***	(0.005)	0.179***	(0.005)
Wildfire	0.004	(0.006)		
Wildfire without request			0.000	(0.007)
Turndown			-0.011	(0.016)
Disaster Declaration			0.043**	(0.018)
Zip code FE	yes		yes	
State-Year FE	yes		yes	
Observations	887,540		887,540	
Within R ²	0.38014		0.38015	
Dependent variable mean	0.47424		0.47424	

Notes: The dependent variable is binary and indicates presidential approval during Obama's presidency from 20 January 2010 to 19 January 2017. All regressions control for a broad set of socioeconomic control variables. Robust standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

codes as treated which in fact also experienced a wildfire (see column 2 of Table 3). Some of the employed control variables such as e.g. income or employment may themselves be affected by disaster declarations. To check whether the inclusion of these possibly endogenous controls have an impact on the estimation results we exclude them from the regression equation and reestimate it (see column 3 of Table 3). As it is shown in Figure 1 it may take up to 80 days after a declaration request is approved and until the decision is made whether an individual is eligible for receiving disaster assistance or not. For this reason, we add a time interval of 80 days after the disaster declaration date and recalculate the disaster declaration and wildfire variables. The estimation results are shown in column 4 of Table 3. In general, time may also play a crucial role in whether or not an individual approves the presidents' job. This is based on the idea that presidential approval ratings change as a presidential election approaches or shortly after the election, when presidents experience a period of warm glow (Berlemann and Enkelmann 2014). This could also have an impact on whether or not the president approves a disaster declaration. We therefore include an additional control variable measuring the days between the next presidential election and the date of the interview (see column 5 of Table 3). We also allow the latter effect to be non-linear (column 6 of Table 3). The estimation results for the three variables of central interest turn out to be remarkably stable across all these stability tests. The wildfire and the turn down dummies are never significantly different from zero while we always find a positive and significant effect for disaster declarations. And even the size of the effect changes only slightly between the variants.

Table 3. Stability Tests Results for the Effect of Wildfires and Disaster Declarations on Presidential Approval

	Min. 2 obs. per zip code and year	Without zip codes with no fire	Without possibly endog. controls	80 Days Application Period	Control for Days to Election	Control for Non- Linear Days to Election	Disaster Decl. Frequency
Wildfire	-0.002 (0.007)	0.000 (0.007)	-0.004 (0.006)	0.000 (0.007)	0.000 (0.007)	-0.001 (0.007)	0.000 (0.007)
Turn Down	-0.010 (0.016)	-0.011 (0.016)	0.000 (0.016)	-0.012 (0.016)	-0.014 (0.016)	-0.016 (0.016)	-0.012 (0.016)
Disaster Declaration	0.044** (0.018)	0.044** (0.017)	0.040** (0.017)	0.048*** (0.018)	0.045** (0.018)	0.044** (0.017)	
Days to Election					0.000*** (0.000)	0.000*** (0.000)	
Days to Election square						0.000*** (0.000)	
Disaster Decl. Frequency							0.033** (0.015)
Zip code FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	854,989	883,485	1,040,582	887,540	887,540	887,540	887,540
Within R ²	0.38137	0.38008	0.38185	0.38015	0.38060	0.38082	0.38015
Dependent variable mean	0.47741	0.47463	0.46616	0.47424	0.47424	0.47424	0.47424

Notes: The dependent variable is binary and indicates presidential approval during Obama's presidency from 20 January 2010 to 19 January 2017. All regressions control for a broad set of socioeconomic control variables. Robust standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In some zip codes, more than one disaster declarations were declared over the 12 months preceding an interview. Therefore, as an additional stability test, we study whether the frequency of disaster declarations has an impact on the probability of approving the president's job. We therefore use a frequency indicator instead of a dummy variable for disaster declarations. The results, presented in the last column of Table 3, demonstrate that an additional disaster declaration

increases the likelihood of approval of the president's job by 3.3 percentage points.

5 Effect Dynamics

The earlier literature (see e.g. Bechtel and Hainmueller 2011) indicates that the effects of providing disaster aid on the outcome of political elections is likely temporary. It seems to be plausible that this holds true even for presidential popularity. In our main estimation results we assumed that the effect of providing disaster aid or the denial to declare a disaster event is based on the experience of a wildfire over the year preceding the interview date. In the following we study the temporal dynamics of the popularity effects in two different ways.

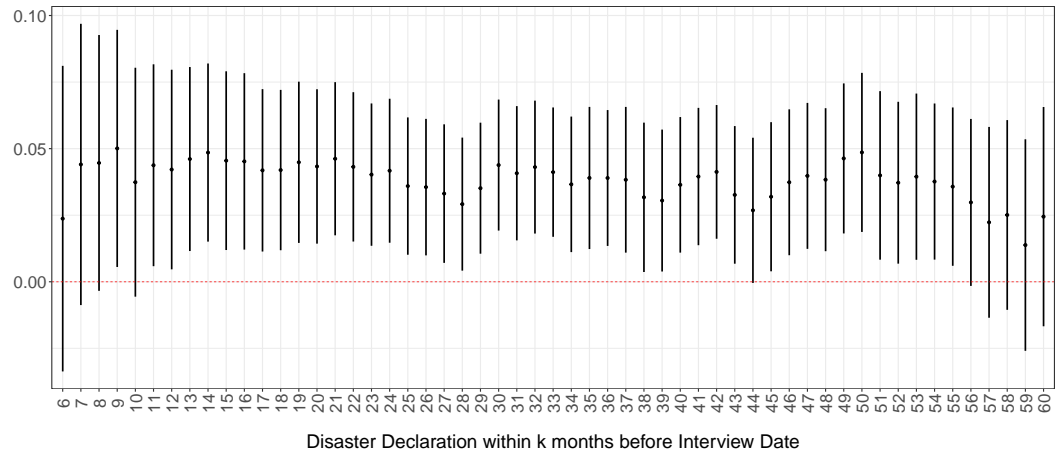


Figure 5. Effect of Disaster Declaration Approvals on Presidential Approval - Coefficient Estimates at 95% Confidence Interval

First, we repeat our baseline estimation of equation 1 and stepwise increase the number of months we consider to calculate the variables *APP*, *DEN* and *WWR*. We start out with considering only disaster events which occurred over the 6 months preceding the interview and then increase this period stepwise by single months up to a maximum of 60 months. In Figure 5 we show a graphical representation of the estimation results. The plot shows the estimated coefficient of the disaster declaration variable *APP* as well as the 95-percent confidence interval. We observe that the effect becomes significant for the first time when we use a time window of 9 months. The effect turns out to be positive and significant on the 95-percent confidence level for specifications from 11 months up to 55 months. Afterwards, the effect becomes systematically smaller in size and renders insignificant.

In order to get an even more precise picture of the dynamic structure of the effect we repeat the estimation in six-month intervals. In the first estimation, we only consider events which occurred in the six months preceding the interview. In the second step we add events which happened in between 7 and 12 months before the interview was given.¹² We stepwise increase this procedure until the lag of 19 and 24 months. The estimation results are shown in Table 4.

We find no significant effect for events which occurred in the first six months preceding the interview. The coefficients start to become significant for events occurring after six months. This result seems reasonable as it takes some time until disaster aid is provided to individuals and shows its impact on the ground. We further find significant results for events occurring within the 13th and 18th months shown in column 3 of Table 4. When we add more variables for events occurring later than one and a half years, we find no significant results. Consequently, the events may be too

12. We do not proceed in monthly steps, here, as the number of treated observations is too low to estimate the effects in this fine granularity.

Table 4. Temporal Dynamics of the Disaster Declaration Effect on Presidential Approval

	1-6 (1)	7-12 (2)	13-18 (3)	19-24 (4)
Wildfire 1-6	0.009 (0.009)	0.008 (0.009)	0.008 (0.009)	0.008 (0.009)
Turn Down 1-6	-0.010 (0.024)	-0.011 (0.024)	-0.013 (0.024)	-0.015 (0.024)
Disaster Declaration 1-6	0.034 (0.028)	0.036 (0.028)	0.036 (0.029)	0.030 (0.029)
Wildfire 7-12		-0.006 (0.009)	-0.006 (0.009)	-0.006 (0.010)
Turn Down 7-12		-0.053 (0.035)	-0.056 (0.034)	-0.062 (0.042)
Disaster Declaration 7-12		0.046** (0.021)	0.048** (0.021)	0.048** (0.021)
Wildfire 13-18			-0.002 (0.008)	-0.005 (0.008)
Turn Down 13-18			-0.058* (0.032)	-0.053 (0.037)
Disaster Declaration 13-18			0.046** (0.020)	0.049** (0.021)
Wildfire 19-24				-0.013 (0.009)
Turn Down 19-24				-0.036 (0.028)
Disaster Declaration 19-24				-0.006 (0.023)
Zip code FE	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	887,540	887,540	887,540	827,895
Within R ²	0.38015	0.38015	0.38015	0.38192

Notes: The dependent variable is binary and indicates presidential approval during Obama's presidency from 20 January 2010 to 19 January 2017. All regressions control for a broad set of socioeconomic control variables. Robust standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

distant in time for individuals to continue attributing disaster aid to the president.

6 Which Political Group Drives the Results?

In our empirical analysis, we included respondents with rather differing party preferences. As shown in Table 1, our sample consists roughly of three equally large groups identifying themselves as democrats, republicans or independents. Other party identifications are very rare. Somewhat unsurprisingly, political preferences turned out to be an important predictor for individual presidential approval decisions in our estimations. Democrats, but also independent respondents and individuals with other party identifications show a much higher probability to approve the way President Obama did his job than Republicans. Against this background one might speculate that a president's reaction to disaster aid requests also depends on political preferences. As an example, respondents identifying themselves as republicans might be less responsive to Barack Obama's behavior as democrats.

Table 5. Effect of Wildfires and Disaster Declarations on Presidential Approval based on Political Views

	Republican	Democrat	Independent	Other Party
Wildfire	0.005 (0.008)	-0.005 (0.014)	-0.007 (0.015)	-0.011 (0.190)
Turn Down	0.007 (0.024)	-0.002 (0.021)	-0.020 (0.037)	0.041 (0.298)
Disaster Declaration	0.016 (0.019)	0.043 (0.036)	0.074** (0.037)	0.147 (0.269)
Zip code FE	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	279,053	298,464	300,882	9,141
Within R ²	0.06761	0.03608	0.06333	0.09687
Dependent variable mean	0.09334	0.86702	0.44288	0.30981

Notes: The dependent variable is binary and indicates presidential approval during Obama's presidency from 20 January 2010 to 19 January 2017. All regressions control for a broad set of socioeconomic control variables. Robust standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

In order to shed some light on the role of party identification on popularity effects in the context of approvals or disapprovals of FEMA aid requests we repeat our baseline estimation approach for each of the four party identification groups. Table 5 shows the results for the different sample splits. It turns out that there is no significant effect of a disaster declaration on presidential approval for Democrats, Republicans or individuals who prefer another party. However, we find a significant positive effect of disaster declarations for individuals who consider themselves independent. Moreover, the estimated coefficient is larger than the one we previously estimated for the whole sample. Thus, we conclude that the effect of a disaster declaration on presidential approval is largely driven by individuals who consider themselves independent. This finding is quite plausible as it is especially the group of individuals with no specific party affiliation which can be affected by (suitable) policy measures.

7 Summary & Conclusions

There is ample evidence that politicians look ahead to the next election in their political actions, and therefore take the most advantage of unexpected events such as natural disasters. We find evidence

that presidents who provide disaster relief by approving disaster declarations are associated with higher popularity. We use highly frequent survey data geo-referenced at small-scale zip code level and combine this data with geo-referenced data on wildfires and data on disaster declaration decisions.

Thereby we are able to shed more light upon incentives and individuals' perception of political decisions in the aftermath of a disaster. The administrative process regulated by law allows enough leeway for the president to demonstrate strong commitment in times of need. Although it is the governor's obligation to submit a disaster request and to appeal against decisions, the solely executive authority to declare a state of disaster resides with the president. Many studies research the politicization of federal disaster relief management with particular attention to the president of the United States. In this context, the chosen treatment is typically reflected in monetary damage data, whereas the main indicator of voter reward is captured by electoral results and vote shares (see for example Reeves 2011; Gasper and Reeves 2011; Cole, Healy, and Werker 2012; Chen 2013; Ramos and Sanz 2019).

On the contrary, we aim to measure the impact using highly frequent survey data. This approach is advantageous in overcoming the limitations of voting data, which are only rarely observed and therefore have a time lag between experiencing a disaster (and receiving aid) and the actual day of voting, due to long election intervals. Furthermore, we use spatial geo-referenced disaster information on wildfires as an exogenous shock. Using the presidency period of Barack Obama we find that individuals who receive disaster assistance have a higher probability of approving how the president is handling his job even after controlling for individual effects and including zip code and state-by-year fixed effects. We find that the effect is largely driven by independent voters. The effect is most pronounced after 6 months and is persistent for approximately one year after it disappears. Our results are robust to several stability tests.

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Appendix

Table 6. Effect of Varying the Length of the Evaluation Period on Presidential Approval

	6 Months	18 Months	24 Months	30 Months	36 Months
Wildfire ⁶	0.008 (0.009)				
Turn Down ⁶	-0.008 (0.024)				
Disaster Declaration ⁶	0.031 (0.028)				
Wildfire ¹⁸		-0.002 (0.006)			
Turn Down ¹⁸		-0.016 (0.012)			
Disaster Declaration ¹⁸		0.041*** (0.014)			
Wildfire ²⁴			-0.008 (0.006)		
Turn Down ²⁴			-0.004 (0.010)		
Disaster Declaration ²⁴			0.036*** (0.013)		
Wildfire ³⁰				-0.009 (0.006)	
Turn Down ³⁰				-0.011 (0.010)	
Disaster Declaration ³⁰				0.037*** (0.012)	
Wildfire ³⁶					-0.006 (0.006)
Turn Down ³⁶					-0.014 (0.009)
Disaster Declaration ³⁶					0.034*** (0.012)
Zip code FE	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Observations	887,540	827,895	765,262	703,065	641,085
Within R ²	0.38015	0.38191	0.38237	0.38596	0.38849

Notes: The dependent variable is binary and indicates presidential approval during Obama's presidency from 20 January 2010 to 19 January 2017. All regressions control for a broad set of socioeconomic control variables. k indicates the number of months considered in the evaluation period. Robust standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.