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Make it Burn? Presidential Approval, Disaster Aid and Wildfires

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Abstract

For governments, the occurrence of natural disasters creates the opportunity to demonstrate their willingness and competence to provide quick and efficient disaster aid. Various studies have investigated the political yield of providing disaster aid by analyzing the effects of aid on subsequent election results without delivering a coherent picture. This paper complements the literature by using high-frequency survey data on presidential approval. When combining this data with wildfire data and information on Federal Emergency Management Agency (FEMA) aid approvals and disapprovals we find that Barack Obama gained in support among (potential) voters for which FEMA aid was approved by the president while he was not punished for denials of FEMA help. We show that this effect is solely driven by voters without declared party affiliation and is persistent for some time. Altogether, we thus find empirical evidence in favor of the hypothesis that governments can boost their popularity by providing disaster aid.

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 that they maximize 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 cause 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. They were one of the first to study the relation of voting behaviour and policy decisions and report that at the ballot box the voter is more reactive to federal aid given after a disaster but not willing to reward prophylactic expenditures before disasters. 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.

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), which occurred 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 following 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 increases 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). Rather than mixing up several types of disasters with quite different effects we concentrate on wildfires, 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 express satisfaction with the way the 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.

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 estimation approach and the employed data. It also delivers some basic descriptive information of the data. The major estimation results are presented and discussed in section 4 while section ?? shows the results of some stability tests. The final section 6 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.

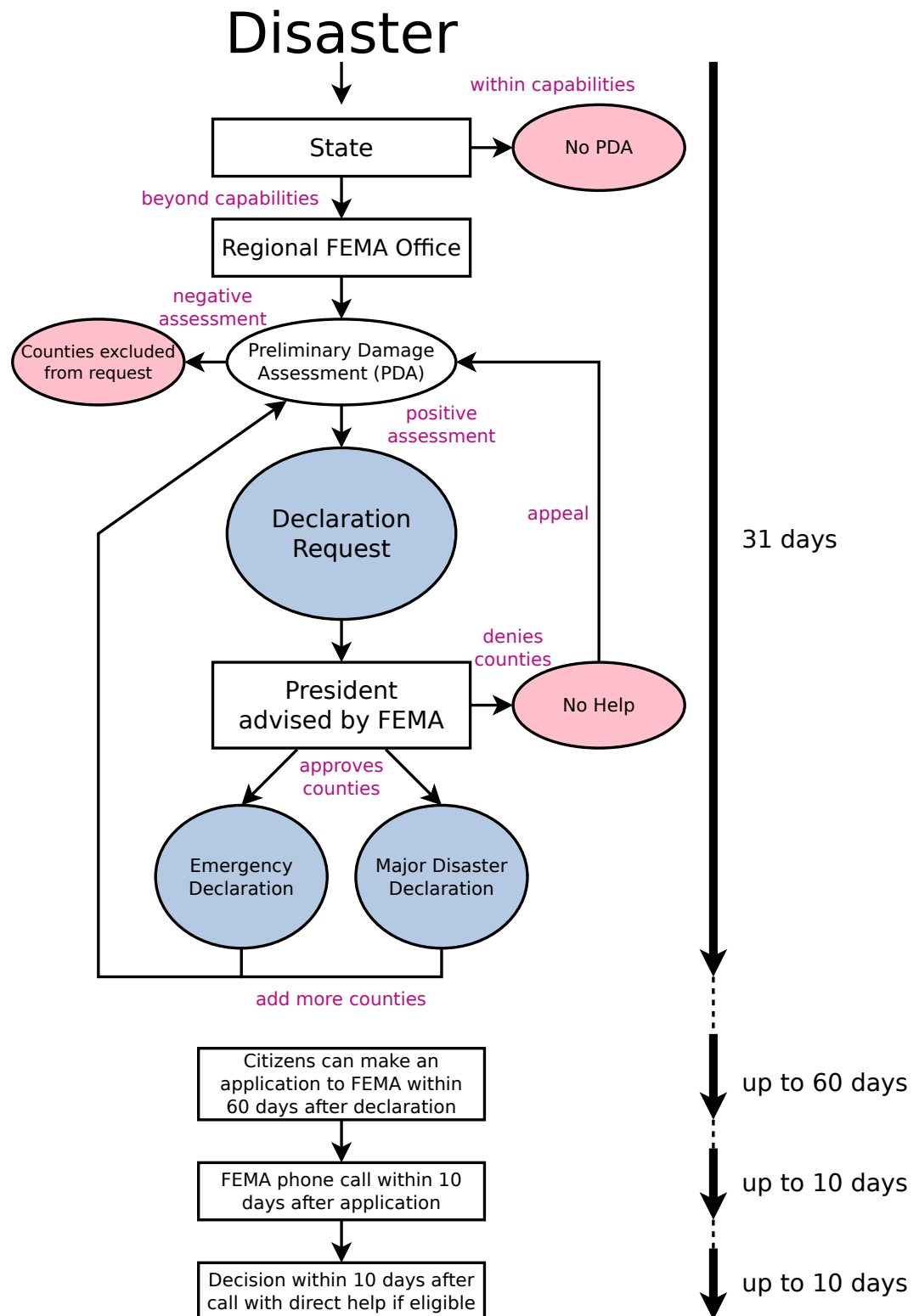
In principle, the U.S. constitution defines three emergency aid programs: (i) Emergency Declarations, (ii) Major Disaster Declarations and (iii) Fire Management Assistance Grants (FMAG). In all three cases, the state hit by a fire must submit a request for federal help if the mitigation or reconstruction 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](#)



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.

Management Agency 2023b).

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.

3 Data and Empirical Strategy

To explore whether a disaster declaration has a systematic effect on the popularity of a president, we regress a measure of presidential approval from repeated cross-sections of an U.S.-wide survey on a set of individual socioeconomic control variables including the political orientation of a person. We define the popularity of a president as whether an individual approves or disapproves how the president is handling his job (presidential approval).

In the first step, we want to analyse the effect of a wildfire on presidential approval. Therefore, we regress $PA_{i,j,s,t}$ being a dummy variable indicating the presidential approval of individual i in zip code j of state s at time t on $Wildfire_{j,t}$ which indicates whether a zip code is affected by a wildfire within the previous 12 month of the interview date or not. We also include a vector $X_{i,t}$ which contains individual-level control variables like e.g. gender, age or income. Thus, our estimation equation is:

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

To further distinguish between the effect of a wildfire and the effect of a disaster declaration and its outcomes, we need to distinguish between the effect of a wildfire without a disaster declaration request and the effect of a disaster declaration. Therefore, we include a variable which indicate first the occurrence of a wildfire for which no disaster requests exist and second variables which indicate after a governor's request of a disaster declaration, how the disaster declaration is handled i.e. whether the request is denied or approved giving to the following estimation equation:

$$PA_{i,j,s,t} = \theta X_{i,t} + \alpha W_{j,t} + \beta TD_{j,t} + \gamma DD_{j,t} + \delta_{t,s} + \eta_j + \epsilon_{i,j,s,t} \quad (2)$$

with $W_{j,t}$ being a dummy variable that indicates the occurrence of a wildfire within the twelve months prior of the interview date in zip code j for which no disaster declaration is requested. If a governor requests a disaster declaration for a wildfire in zip code j at time t within the last twelve months, the dummy variable $TD_{j,t}$ turns one when a request is denied. $DD_{j,t}$ indicates whether a request is approved in zip code j at time t also within the twelve months prior to the individuals' interview date. To account for unobserved regional and year specific heterogeneity we additionally add year by state and zip code fixed effects ($\delta_{t,s}$ and η_j).

As it takes time for disaster relief to be administered and to take effect, the time period considered in the individual assessment process should not be too long or too short. As explained in section 2, the disaster declaration process typically takes some time from the time the request is made to the time the disaster assistance is received by the individual. In addition, the effect of disaster relief lasts for some time before it dissipates (Bechtel and Hainmueller 2011)⁸. Therefore, in our baseline regression we opt for a time period of twelve months and check whether an individual was affected by a wildfire that was declared a disaster during this time frame.

As our dependent variable is binary, we use a linear probability model for estimating equation 2. This has the advantage of controlling for heterogeneity on the zip code and state by time dimension by including zip code and state-year fixed effects.

In Table 2 we report the results when sequentially estimating equation 2 by applying the ordinary least squares (OLS) method.

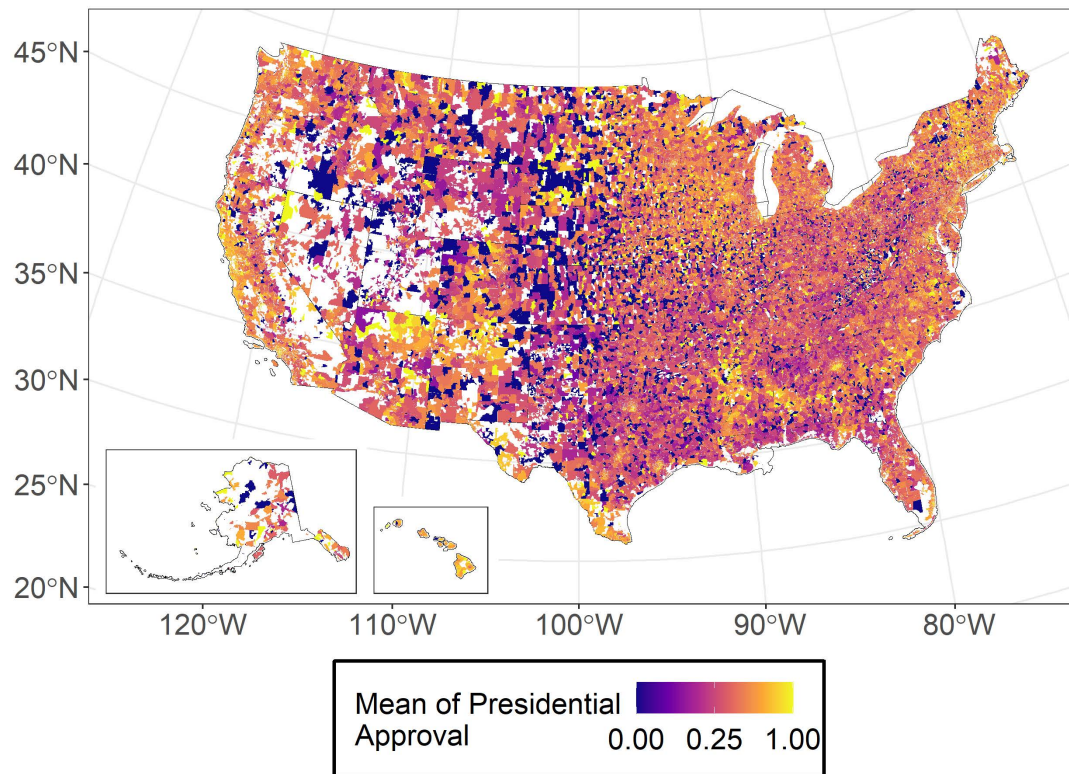
To estimate equation 2 we combine survey data on the zip code level with a data on wildfires. The survey data comes from the Gallup Daily tracking survey (Gallup 2010-2017) and consists of two different tracks, namely the Well-being track and the Politics and Economy track. From 2008 on Gallup interviews at least 1,000 U.S. adults daily, 350 days per year. Each track represents more than 95% of the adult U.S. population. The survey includes standard demographic information and

8. We relax this assumption and test for the longevity of the effect in section ??

the location of individuals on the zip code level, which allows the survey data to be combined with other geocoded data. Within the Politics and Economy track, individuals answer questions about their political views and their economic situation. Due to limited data availability, this analysis solely focus on the presidency of Barack Obama. Obama was inaugurated on 20 January 2009 and served until 19 January 2017, when he was succeeded by Donald Trump. Since we are interested in the effect of disaster declarations on presidential approval, we make use of the following question within the Politics and Economy track

”Do you approve or disapprove of the way Barack Obama is handling his job as president?”

Possible responses include 'Approve', 'Disapprove', 'Don't know', and 'Refuse'. Figure 2 shows the mean share of positive answers on presidential approval over the data set period for each zip code.



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. Mean of Presidential Approval per zip code over 20 January 2010 to 19 January 2017

For the empirical analysis we employ a broad set of socioeconomic control variables. Summary statistics can be found in Table 1. In detail, we control for age, gender and race. We also add information on the highest completed level of education and whether a person is employed, unemployed or not in work force. Furthermore, we include income information which is categorized in classes from less than \$720 up to \$120,000 or more. To identify the effect of a disaster declaration on presidential approval, independent of an individual’s political views, dummy variables were added indicating whether the person identifies as a Republican, Democrat, Independent, or other party. In total, our data covers the time period from 20 January 2010 to 19 January 2017 resulting in a total of 887,540 observations in 30,026 zip codes.

In the next step we combine this data with wildfire data from the Monitoring Trends in Burn Severity (MTBS) program ([MTBS Project, USDA Forest Service/U.S. Geological Survey 2023](#)). The

Table 1. Summary Statistics

	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
Wildfire	0.004	0.07	0	1
Turn Down	0.001	0.02	0	1
Disaster Declaration	0.001	0.02	0	1
<i>Dependent variables:</i>				
Presidential Approval	0.47	0.50	0	1
Observations	887,540			

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 reached by using information from the state federal agencies and organizations and Landsat satellite multispectral imagery at 30-meter resolution. MTBS categorizes the fires into three different types. In addition to the wildfire category, there are also prescribed fires and unknown fires. Prescribed fires are any fires which are intentionally ignited by management actions. All fires for which no incident type was reported by the original reporting agency fall into the category unknown. We focus on wildfires that are defined as

"An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out. (MTBS, 2024)"

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. To ensure that a certain amount of individuals in our survey data is affected by a wildfire we only include wildfires that have an effect on a zip code of at least 1% of its size. This is also reasoned by the fact that we want to measure the effect of sizable shocks on individuals.

Further filtering the data for all wildfires that occurred within Obama's presidency, for wildfires that affect a zip code existent in our survey data results in a total of 1,491 wildfires (see Figure 3).

For the construction of the dummy variables $W_{j,t}$, $TD_{j,t}$ and $DD_{j,t}$, we need additional information about the disaster declarations which are provided by FEMA. In detail, we use two data sets: the Disaster Declarations Summaries ([Federal Emergency Management Agency 2023b](#)) and the Declaration Denials ([Federal Emergency Management Agency 2023a](#)). The first data set contains all declared disasters from 1953 on at the county level. To measure the impact of disaster assistance on individuals following a wildfire, we only consider incidents classified as 'fire' and we exclude any FMAG declaration type which is classified as 'fire management'. As for the FMAG, the president is legally authorized to provide aid including equipment and grants in case of fire threats⁹. However, the authority has been delegated to the FEMA aiming to accelerate the aid relief since one condition for approving is the immediate threat of a fire which may result in a major disaster. For this reason, we only keep major disaster and emergency declarations in our data because in the fire management classification not the president but the FEMA alone is regularly involved in the procedures to grant federal help for affected regions as stated in the Code of Federal Regulations¹⁰. Another reason is because the latter focuses on mitigating, managing, and controlling fires that could potentially result in a major disaster. Therefore, it is possible that individuals may not be significantly affected and may not even realise the mitigation process. Furthermore, we use the Declaration Denials data that lists all requests for major disaster declarations and emergency declarations that have been denied on the state level.

We use both data sets and check for each zip code in our data set whether it is located in a county or state where a disaster declaration is approved or denied. In the next step, we merge this information with the MTBS data and define the dummy variable $DD_{j,t}$ which equals one if a zip code is affected by a wildfire and if it is located in a county for which a disaster declaration is approved both within the last twelve months before the interview date. Using the same systematic, we construct the dummy variable $TD_{j,t}$ for denials of disaster declaration requests. In general, most

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

10. 44 CFR Part 204

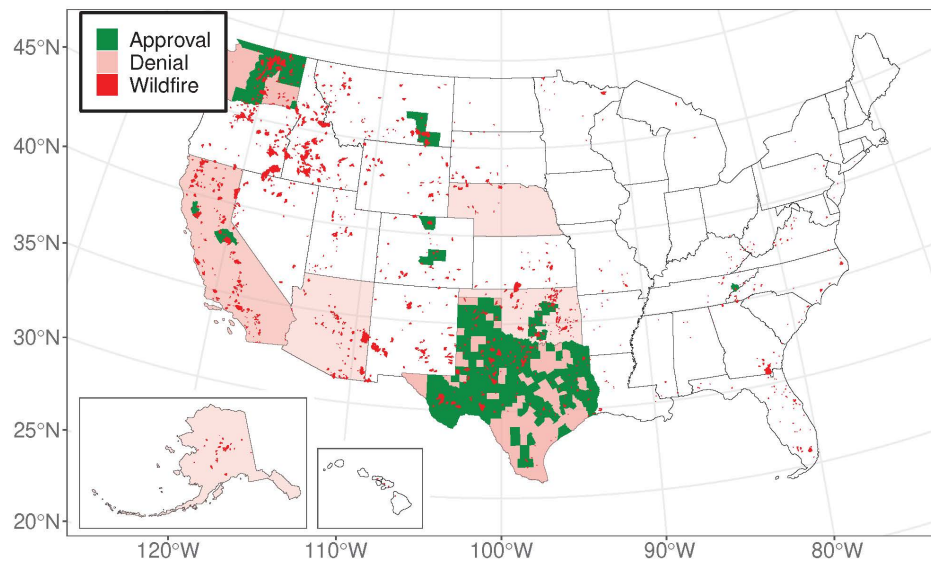


Figure 3. Wildfires and Disaster Declarations within Obama’s Presidency (January 20, 2009 and January 19, 2017)

of the disaster declarations are approved by the president due to the structure of the process. The dummy variable $W_{j,t}$ only includes wildfires at the zip code level for which no disaster declaration is requested, i.e. $DD_{j,t}$ and $TD_{j,t}$ are equal to zero. This results in twelve denials and 189 approvals within Obama’s presidency for which survey data is available (see Figure 3). Overall, we have 3,972 observations in our sample for which $W_{j,t}$ equals one, 519 observations for which $DD_{j,t}$ equals one and 450 observations for which $TD_{j,t}$ equals one.

4 Individual-level Effects

4.1 Main Results

In Table 2 we report the results when estimating equation 1. In the first step we only include a dummy which indicates whether a zip code is affected by a wildfire or not. It turns out that there is no significant effect on the probability of approving Obama’s job as a president. A dummy variable does not take into account the size of wildfires, as a small wildfires may not affect individuals compared to larger ones. To account for this, we reestimate equation 1 and instead of a dummy we include a variable indicating the share of a zip code which is affected by a wildfire. Indeed, we find a significant positive effect of the burned area share on presidential approval in column (2) of Table 2. Larger wildfires are more likely to be declared major disasters. Thus, this effect may be driven by individuals receiving disaster aid and thus, more likely approving Obama’s job as a president. To explore this further, we include the various dummy variables that distinguish between wildfires for which no major disaster request was submitted ($W_{j,t}$), those for which a disaster declaration was approved ($DD_{j,t}$) and those for which a disaster request was denied ($TD_{j,t}$). The third column of Table 2 shows the results when estimating equation 2. We find no significant effect of wildfires without a request on presidential approval. This result is not surprising as the president has no possibility of granting assistance if no disaster declaration request is submitted by the governor (see Section 2). We do not find an effect of a disaster declaration denial on presidential approval as its coefficient is insignificant. However, we find a positive and significant effect of an approval of a disaster declaration. This suggests that individuals living in a zip code affected by a wildfire, for which a disaster declaration is approved have a 4.3% higher probability to approve how the president is handling his job. As we control for individuals’ political views, individuals reward the

president for his support regardless of their political views. This result indicate that declaring a disaster and therefore granting federal disaster assistance increases the popularity of a president. The coefficients for the control variables remain consistent and are as anticipated across all models.

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

	(1)	(2)	(3)
Democrat	0.682***	0.682***	0.682***
Reference: Republican	(0.001)	(0.001)	(0.001)
Independent	0.305***	0.305***	0.305***
Reference: Republican	(0.001)	(0.001)	(0.001)
Other Party	0.179***	0.179***	0.179***
Reference: Republican	(0.005)	(0.005)	(0.005)
Wildfire	0.004		
	(0.006)		
Burned Area Share		0.001**	
		(0.000)	
Wildfire without request			0.000
			(0.007)
Turn Down			-0.011
			(0.016)
Disaster Declaration			0.043**
			(0.018)
Zip code FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	887,540	887,540	887,540
Within R ²	0.38014	0.38015	0.38015
Dependent variable mean	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. Standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

However, political views may play an important role when evaluating the president's job as the party of the president may be an important factor. Thus, in case of Obama being a democrat the effect may largely driven by individuals viewing themselves also as democrats. To further analyse whether individuals respond systematically differently according to their political views, we split the sample into four groups according to the political views of the individuals and estimate equation 2. Table 3 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 result for individuals who consider themselves independent. The coefficient of disaster declaration is even higher than for the whole sample. Thus, the effect of a disaster declaration on presidential approval is largely driven by individuals who consider themselves independent.

4.2 Stability Tests

To validate our results we conduct various stability tests. First, instead of considering the last twelve months of an individual being interviewed we modify equation 2 such that we estimate

Table 3. 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. Standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

$$PA_{i,j,t,s} = \theta X_{i,t} + \gamma Post_{i,j,t} + \delta_{t,s} + \eta_j + \epsilon_{i,j,t,s} \quad (3)$$

with $Post_{i,j,t}$ indicating whether or not an individual i living in zip code j at time t has been interviewed after an approval of a disaster declaration. We are interested in the coefficient γ which shows the effect of a disaster declaration approval on the presidential approval. As in equation 2 we control for State-Year and zip code fixed effects. As we need to disentangle zip codes which are within a county for which a disaster declaration is approved but not affected by a wildfire from those in the county which are affected by a wildfire, we construct a sub sample and use only observations of zip codes which have been affected by a wildfire. We further restrict our sample to zip codes for which the share of the affected area is at least the minimum size of the area share for which a disaster declaration has been approved. This helps to ensure that we compare similar events that sorely differ between the fact that zip codes in the treatment groups have received a disaster declaration approval whereas zip codes in the control group have not.

Table 4 shows the results when estimating equation 3. It turns out that the coefficient shows a significant positive effect of a disaster declaration approval on whether an individual is approving how the president is handling his job.

To further validate our results we try to ensure that fixed effects are accurately calculated. To do so we restrict our sample using for equation 2 to zip codes for which we have at least two observations per year. The estimation results are shown in the first column of Table 5. It turns out that the results are very similar to the base estimation. The coefficient of disaster declaration is still positive and significant and only changes marginally. As described in section 2 a disaster declaration defines which counties are eligible for receiving disaster assistance on the county level. To further distinguish between observations receiving disaster relief, we only define observations as treated only if a wildfire has occurred in the zip code. Thus, we still have observations in our sample which are in a county for which a disaster declaration was made but no wildfire has occurred. To ensure that these observations do not bias our results we exclude them from our sample. Results for this estimation are reported in the second column of Table 5. Again, the coefficient of disaster declaration turns out to be significant and positive and does not change much. Some of our

Table 4. Results for the Effect of Disaster Declarations on Presidential Approval

	(1)	(2)
Post	0.036*** (0.013)	0.032* (0.019)
Zip code FE	Yes	Yes
Year FE	Yes	No
State-Year FE	No	Yes
Controls	Yes	Yes
Observations	28,393	28,393
Within R ²	0.37763	0.37742
Dependent variable mean	0.37354	0.37354

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. Standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

control variables for example income and the employment variables may be affected by a disaster declaration. That is why we exclude possibly endogenous controls from the equation. Results shown in column three of Table 5 do not change much compared to the baseline. As shown in Figure 1 it may take up to 80 days after a declaration request is approved 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. It turns out that the coefficient is highly significant and even larger than in our baseline regression.¹¹ 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. That is why we include an additional variable which controls for the number of days between the next presidential election and the date of the interview in column four and additionally for its non-linearity in column six. The coefficients turn out to highly significant but very small and the coefficient of disaster declaration only changes marginally. To analyse whether the frequency of disaster declarations impacts the probability of approving the president's job, we use a frequency indicator instead of a dummy variable for disaster declaration. Specifically, we construct a variable that indicates the number of disaster declarations. The results presented in the last column of Table 5 demonstrate that an additional disaster declaration can increase approval of the president's job by 3.3%. For instance, there are several zip codes in our sample, where two disaster declarations were issued in the twelve months prior to the individual being interviewed and thus, resulting in an increase of up to 6.6% in the probability of approving the president's job.

5 Temporal Effect Dynamics

The advantage of our dataset is that we have information on the exact date of the interview. As individuals may consider different time periods in their evaluation process, we now change our right-hand-side wildfire variables and construct new dummy variables for a wildfire without a disaster declaration request ($W_{j,t}$), a disaster declaration denial ($TD_{j,t}$) and a disaster declaration

11. Individuals may consider different time periods in the evaluation period based on the exact interview date. Results for considering various time intervals and additionally considering the 80 days application period, are consistent with results using the baseline in Table 7.

Table 5. 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. Standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

approval ($DD_{j,t}$). However, we now consider different time periods prior to the interview date. Therefore, not the whole 12 months prior to the interviewed date are considered, instead we use different time periods for $W_{j,t}$, $TD_{j,t}$ and $DD_{j,t}$. For example, the dummy variable $DD_{j,t}$ used in column two of Table 6 turns one if a disaster declaration is approved within the 7th and 12th months prior to the interview date. Results for different time periods are reported in Table 6. The coefficients are insignificant when considering the first 6 months. As it takes some time until disaster assistance is disbursed this result is not surprising. The effect of a disaster declaration approval becomes significant when considering the 7th to 12th months period. This effect remains stable even in the 13th to 18th months period in column three of Table 6. In the case of a period exceeding 18 months, the coefficients become insignificant. Thus, the effect of a disaster declaration approval is most pronounced within the second half of the year, with persistence for approximately one year after the effect disappears in the longer run.

6 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

Table 6. Temporal Dynamics of the Disaster Declaration Effect on Presidential Approval

Months	1-6	7-12	13-18	19-24	25-30	31-36
Wildfire	0.009 (0.009)	-0.006 (0.009)	-0.003 (0.008)	-0.013 (0.009)	0.006 (0.010)	0.004 (0.011)
Turn Down	-0.010 (0.024)	-0.053 (0.035)	-0.056* (0.032)	-0.032 (0.028)	0.006 (0.033)	0.034 (0.037)
Disaster Declaration	0.034 (0.028)	0.044** (0.021)	0.043** (0.020)	-0.011 (0.023)	-0.020 (0.020)	0.006 (0.023)
Zip code FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	887,540	887,540	887,540	827,895	765,262	703,065
Within R ²	0.38015	0.38015	0.38015	0.38191	0.38236	0.38595

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. Standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

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 2020).

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 month and is persistent for approximately one year after it disappears. Our results are robust to several stability tests.

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Appendix

Table 7. 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. Standard errors are in parentheses and clustered at the zip code level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.