

Racial Identity in a Changing World:

The Impacts of Environmental Degradation on Linked Fate

Abstract:

Climate change is an inherently marginalizing experience. Environmental degradation is fundamentally linked to the extractive nature of capitalism, and to forget the institutionalized consequences of colonialism would sidestep a large piece of this puzzle. A growing body of evidence has shown that people of color are more likely to live in areas that experience adverse climate effects, such as drought and wildfire, are more likely to experience environmental degradation, are less likely to receive help after natural disasters, and what help they do receive is often condemned rhetorically by politicians and media. Much literature has focused on the impact of demographic information such as race, gender and sexuality on the belief in climate change, however little is known about the ways which experiences like these might impact marginalized communities. I argue that when marginalized people experience environmental impact, the salience of their relative group positionality in the larger political environment becomes more important to them through a stronger sense of linked fate. This is partially due to the direct impact of weathering the practical difficulties of environmental degradation, but it might be heightened by perceptions of the power disparities and systemic injustices that surround climate discourse in the broader political sphere. That environmental degradation and other factors related to climate change are disproportionately felt by the marginalized is not a secret. Just as feelings of alienation due to immigration status make it easier for an individual to feel that their fate is intertwined with that of others in their racial or ethnic group, so too should situations such as repeated wildfire exposure, lack of access to clean water, and poorer health outcomes when these events impact groups along racial and ethnic lines. Through use of a novel measure of environmental degradation (proximity to EPA Superfund National Priority List sites), this study will investigate climate impacts on racialized group dynamics in the United States.

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Climate change is an existential threat to human life and as such will inevitably impact political behavior in important ways (Roston 2008). It is imperative that political science reaches a more thorough understanding of climate change and the inevitable impacts that it will have on political behavior. Already, the issue has become one of the most important issues for Gen Z, and a large number of Millennials are passionate about climate policy as well (Egan & Mullein 2017; Tyson et al 2021). Much literature has focused on the impact of demographic information such as race, gender and sexuality on belief in climate change, however little is known about the ways which experience with climate change might impact those same identities. This research seeks to bridge this gap.

While climate change is an existential crisis for all humans, marginalized groups are the most vulnerable (Nagel 2012; English et al 2013). Thus, an important question in understanding climate change is its impact on the political behavior of marginalized groups. I argue that when marginalized people experience the externalities of climate change, the salience of their relative group positionality in the larger political environment should become more important to them through a stronger sense of racial linked fate. This is partially due to the direct impact of weathering the process of climate change, but it might be heightened by perceptions of the power disparities and systemic injustices that surround climate change discourse in the broader political sphere. The following discussion will focus on a few groups of literature: first, I will discuss patterns of research in climate politics and where this theorization fits in context; next I will illustrate the intertwined nature of identity and climate politics; then I will detail the ways in which the effects of climate change and environmental degradation are dispersed

socially and demographically; then we will move on to a discussion of group consciousness and linked fate as models of understanding racialized political behavior in the United States; before pulling these disparate literatures into a fleshed out theory of climate change and racial linked fate.

Climate Change Politics and Political Science

The study of climate change politics, especially in the American context, has been primarily focused on descriptive works which detail the influence of identity on belief in or concern for climate change, and on the individual, public opinion and electoral outcomes brought on by climate change (Johnson et al 2005; Pidgeon and Fischoff 2011; Achen & Bartels 2017; Egan 2017; Feilding 2016; Blankenship 2021; Bechtel and Mannino 2021; Harth 2021; Mackey et al 2021). Natural disasters and high temperatures in particular have been linked to decreased government legitimacy, more critical appraisal of climate mitigation measures taken by executives, voter turnout, and vote choice (Gomez, Hansford, & Krause, 2007; Healy and Malhotra 2009; Gasper and Reeves 2011; Cohen 2011; Carlin et al 2014; Blankenship 2021). At an individual level, these variables are known to heighten feelings of aggression and competition and to increase support for expensive policy measures, hinting at an increasing level of risk acceptance in respondents (Anderson et al.; Hazlett and Mildenberger 2019).

The largest body of climate politics literature by far is that which describes the impact of demographic variables on belief in or concern for climate change; the two variables are highly correlated in American public opinion, so I will use the concepts interchangeably (Egan & Mullein 2017). As an issue which has been subject to

heightened levels of politicization and polarization over recent decades, it is not surprising that political party and ideology are the strongest predictors of climate concern and thus important controls in any climate study which relies on survey data (McCright and Dunlap 2011; Egan and Mullein 2017). Closely following these are age, gender, and (more importantly for our purposes) race, and socioeconomic status. As I will discuss in the next section, the effects of climate change are disproportionately felt by marginalized racial groups, women, and those of low socioeconomic status. This link between marginalization, climate concern, and climate vulnerability serves as the foundation of this theory of the environmental determinants of minority political behavior.

A tangential but possibly mitigating factor on the effect of climate change on political behavior is issue salience. While this is a highly polarized and highly politicized issue, it is also seen as a low salience one with respondents regularly ranking it as one of the least important issues on the public agenda, and it might even have decreased in recent years (Egan and Mullein 2017; Spisak et al 2022). There is some hope for younger generations, however the general public mood in America is that climate change is something to fight over and have strong opinions about, not something to take action over (Egan & Mullein 2017; Tyson et al 2021). This might indicate that even though certain groups are heavily impacted by climate change they prioritize other issues, but I will attempt to explain how climate impacts could be a spark that incentivizes a stronger feelings of racial identity by making plain the relative inequality inherent in climate change. Thus climate change is not necessarily the salient issue in question, but rather it triggers the salience of identity politics.

What is largely missing from the literature is an in-depth analysis of the impacts of climate change on *group* behavior. This is an important facet of American society which political science needs to account for due to the largely hierarchical racial order that our society is built upon. In order to bridge this gap, I must begin with a description of the various effects that climate change will (and in some cases has already begun to) have on the way that Americans live their lives, with particular attention paid to the realities of who will be most impacted by these effects.

Climate Effects and Their Distribution

The main consequences that the United States will see from climate change include both cyclical and permanent flooding of large portions of the country, drought and water scarcity, crop failure, and increased incidence and severity of natural disasters such as hurricanes and wildfires (Begum et al 2022). Past the obvious risk of loss of life and property damage, these effects are likely to drive migration events, increase incidences of aggression, interpersonal violence and crime, and to lessen the ability of national and state governments to enforce rule of law (Michael & Zumpe 1983; Anderson et al 2000; Tierney et al. 2006; Stock 2007; Piguet & Pécoud 2011; McLeman 2017). These effects have the potential for significant impact to political behavior, however it is not the case that all people will experience the same type or level of climate change effect. It follows then that we should expect a range of outcomes when studying the behavioral impacts of this phenomena.

There are two angles by which we can understand the distribution of climate effects: social and geopolitical. That is, structural inequality has made it so that those

with the least political power are the most likely to bear the brunt of climate change externalities, while the geographic component of climate change itself indicates that certain regions and topographies will be more impacted as well (Nagel 2012; Muro et al 2022). I would assume that these two factors will compound each other, as southern states have large non-white populations who have been disenfranchised and subjected to racialized economic and political power disparities from the very beginning of those regions' statehood (Hill 1965; Dawson 1994; Tomaskovic-Devey & Roscigno 1997; O'Connell 2012). That is not to say that the more left leaning northern states have solved inequality, merely that the southern states are incentivized by conservative and increasingly populist bases to protect older legislation and draft new measures which adversely impact people of color.

Climate change cannot be fully understood through the lens of the natural sciences because at a fundamental level its impacts are tied to overarching structural patterns of inequality. Environmental degradation is inherently linked to the extractive nature of capitalism and to forget the institutionalized consequences of colonialism and chattel slavery would be sidestepping a large piece of this puzzle. A growing body of evidence has shown that people of color are more likely to live in areas that experience adverse climate effects such as drought and wildfire, are more likely to experience environmental degradation due to proximity to industrial areas, are less likely to receive help from their leaders after natural disasters have occurred, and what help they do receive is often condemned rhetorically by politicians and media (Nagel 2012; English et al 2013; Nixon 2013; Soyapi and Kotzé 2016 Gonzalez 2021). Due to this pattern, if the

political behavior of any group has been impacted by climate change it should be more obvious in groups who are marginalized.

The geopolitical distribution of climate change effects could also be important here. Muro et al (2019) use data from the Climate Impact Lab project to show that the largest climate costs by 2080-2099 will be in the South. While this is due to natural phenomena rather than political ones, it is interesting to note the paradoxical nature of the geographic dispersal of climate effects and climate denialism; in fact a comparison of Muro's map of climate costs (an aggregate measure that includes agricultural yields, mortality rates, coastal damage, labor supply, etc) looks strikingly similar to a map of former confederate states save for some spikes in Arizona, Nevada, and California¹. States in the north will be less affected and might even benefit from climate change in the long term due to warmer weather driving agriculture success, but the Southern bastions of conservatism will be the hardest hit areas. This has a few implications. Not only is this a region that has high populations of both Blacks and Latinos, it is also largely under the control of Republican politicians who actively campaign against climate change policy reform and encourage climate skepticism and denial among their base (Zhou 2016; Muro et al 2019; US Census Bureau 2022). This means that even if this effect is not already palpable, and I argue that it might be, racially marginalized groups in the American South will be the first and strongest impacted.

¹ In future iterations of this project I plan to have a comparison of three maps; the Confederate states, current Republican controlled states, and a replication of Muro et al's climate costs map.

Group Consciousness and Linked Fate

In this section, I narrow the conversation from a discussion of the impact of environmental factors on broader political behavior to the more specific question of its impacts on racial identity formation and linked fate. In later work I hope to fill in more of this gap, however, as the above discussion shows, power politics and relative group positionality are the main obstacles in the way of a more equitable experience of climate change. A common way to overcome power disparities throughout the world is racial and ethnic mobilization, a mechanism by which groups of individuals with similar political interests coalesce in order to combine their electoral and social power (Leighly 2001; Fearon 2006; Vermeersch 2012). Nagel (1996, 23) argues that racial mobilization is a product of individuals partaking in a “continuous assessment of situation and audience, emphasizing or deemphasizing particular dimensions of ethnicity according to some measure of utility or feasibility”. As such, it seems logical to investigate the ways in which climate impacts racial identity formation in particular.

One of the main frames of reference in which American politics understands race is through group consciousness and linked fate. These concepts build upon an understanding of race, not as an intrinsic, primordial facet of humanity, but rather as something socially constructed as a means of othering groups with various phenotypic attributes. Omi and Winant (1994) discuss the formation of racial identities through a historical framework, explaining how the importance of identity politics and a history of White political strategies which explicitly opposed the success of non-White groups has lead to a consistant power struggle in American politics. Because race impacts the ways

in which an individual experiences politics, it can also condition the attitudes and behaviors that they adapt within political society.

Group consciousness is an understanding of one's identity in the context of the relative group power disparities brought about by the racially hierarchical nature of American society (Omi & Winant 1994). Linked fate, a concept originally used to describe the impact of chattel slavery on Black group consciousness, takes this one step further and articulates an assumption that whatever happens to one person within a group will impact the outcome of others and that what happens to the group will influence the fate of individuals (Dawson 1995). Dawson developed this concept through reference to his Black Utility Heuristic, which theorizes that their shared history has made race such an important factor for Black Americans that their political behavior is best understood when studied as a group. This is the basis of the study of race and ethnicity by scholars of American politics.

Two major developments in the theory of linked fate are relevant here. First, works such as Sanchez and Masuoka (2010) and Junn and Masuoka (2008) expand the idea of linked fate to other minority groups and describe the potential for malleability in linked fate. Not every Latino feels as if the political outcomes of Latinos as a group will affect them, the importance of their racial identity can condition the way in which that identity shapes their political attitudes and behavior. The theoretically relevant mechanism here is marginalization, because when groups who are excluded from society share experiences such as systemic poverty, xenophobic public opinion, the impacts of immigration on economic and social mobility, and possibly the disproportionate allocation of climate change effects, they are more likely to develop

their group consciousness into a feeling of linked fate due to frequent reminders of relative group positionality (Sanchez & Masuoka 2010).

Second, further research made clear that the role of government policy can be influential in the formation of racial identity. Junn (2007) discusses the way in which decisions by the federal government about which immigrants deemed acceptable and the ways in which those decisions have changed over time has influenced the changing racialized stereotypes for Asian Americans over time. Further, Silva et. al (2020) show that less institutionalized government policies, such as local police performance, can be racialized experiences that shape public opinion along group based lines. I would argue, along with Nagel (2012) that climate mitigation policies are experiences that trigger the salience of relative group positionality.

That environmental degradation and other factors related to climate change are disproportionately felt by the marginalized is not a secret. Just as feelings of alienation due to immigration status make it easier for an individual to feel that their fate is intertwined with that of others in their racial or ethnic group, so too should situations of disproportionate allocation of pollution and other types of environmental degradation when these events impact them along racial and ethnic lines.

H_1 : Minority respondents who live in close proximity to degraded environments will have higher levels of linked fate.

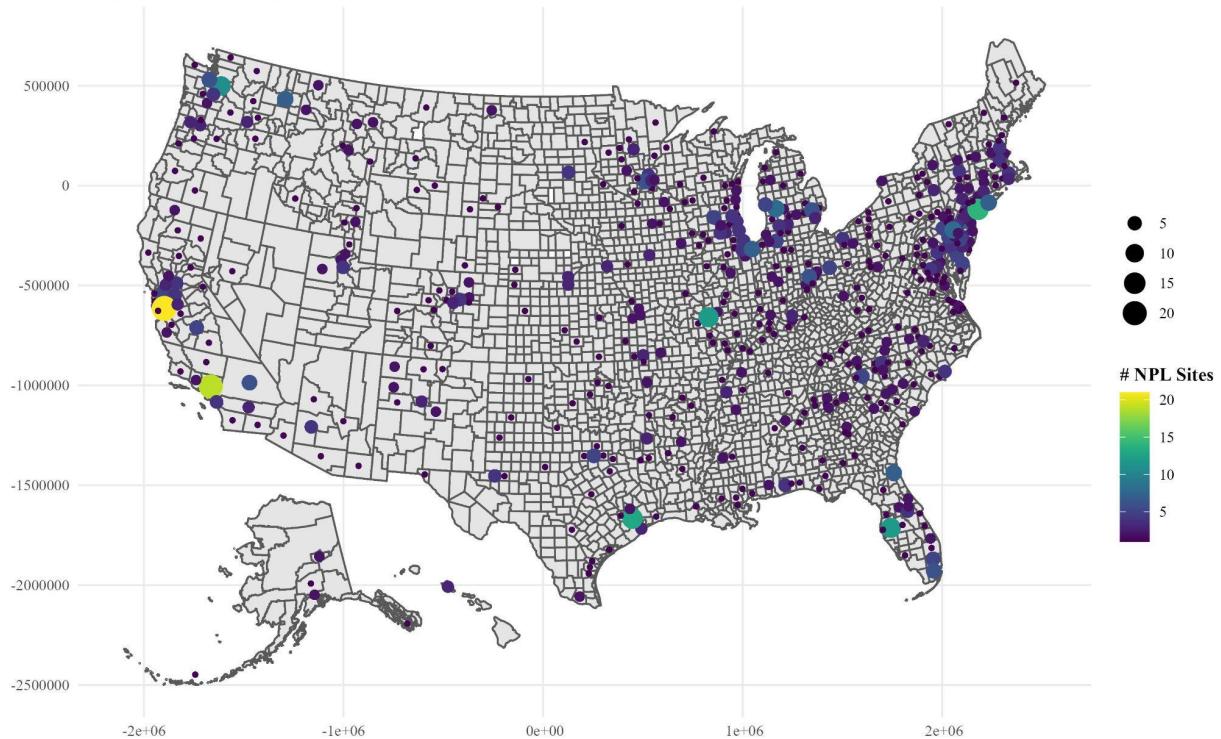
H_2 : The reported levels of linked fate for minority respondents who live in majority white areas will be lower.

Data and Operationalization

Dependent Variable

The outcome of interest in this study, linked fate, is operationalized as a combination of two questions from the 2016 wave of the Collaborative Multiracial Post-election Survey. Respondents who answered “no” to the question asking “Do you think what happens generally to [racial group] people in this country will have something to do with what happens in your life?” were coded as the reference category (0). For respondents who said yes, I rely on a follow up question which asks “Will it affect you a lot (3), some (2), not very much (1)?” to disaggregate them. The 10,142 responses are reported as county-level means.

Figure 1: Map of NPL Sites



Independent Variables

The main predictor in this analysis is proximity to EPA Superfund National Priorities List Sites. This is a program established by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), generally referred to as the EPA "Superfund". This is a novel measure as of yet in political science as far as I can tell, but I would argue that it is more appropriate here than the commonly used measures, generally the levels of one or more specific pollutants in the air or water, for two reasons. First, measures of any given pollutant are hardly a holistic measure of the entire local system. Knowing the levels of ozone in an area might be helpful in certain questions, but on their own their use in this study would not give us a good picture of the conditions that respondents live with. Secondly, I doubt that the average respondent keeps track of pollutant levels on a frequent enough basis to impact their political behavior. The NPL list solves both of these issues. By measuring proximity to a source of environmental degradation, we can more clearly connect the issue with a respondents daily life and, more importantly, Superfund sites are extremely visible as can be explained best through a narrative of the process each site (ideally) will go through. The life cycle of an EPA NPL listed site begins when a community realizes that there has been some event which has caused the area to be degraded, usually through pollution by some contaminant. The site is brought to the attention of the EPA and is given a Preliminary Assessment inspection, where an employee of the EPA surveys the site and determines if the report is viable for continued investigation. Then, a more detailed assessment leads to a review process during which a site is approved if it meets one of the following requirements:

- A score of 28.50 or higher on the Hazard Ranking System (HRS)
- EPA determination that the site is a significant threat to public health
- EPA determination that remediation (an authority limited to NPL sites) will be more cost-effective than emergency removal (a more accessible tactic)
- Top Priority designation by a State or Territory government
- Recommendation by the Agency for Toxic Substances and Disease Registry (a sister agency also established by the CERCLA/Superfund legislation)

The key part of this process to its viability as a variable in this analysis is community recognition of the site. Since their recognition of the site is necessary for it to be noticed by the EPA, and due to the visibility of established sites (see Appendix 1), we can assume that most respondents would recognize that they live near or directly in a contaminated area².

The measure for NPL proximity is a count of sites per county, with a total N of 1,235 active sites in 2016³. Due to the severe zero skew in the data, the measure has been corrected using an inverse hyperbolic sine transformation which is a method used in econometrics to adapt heavily right-skewed data (Aihounton & Henningsen 2021).

I also include additional respondent-level demographic predictors which might influence survey sampling. *Age* is a 7 level-factor ranging from “18-24” to “65+”; *female* is a dichotomous measure of gender with female as the reference category; and *race* is

² While I argue that this measure is the most appropriate available, I do recognize that it does have its faults. Primarily in the possible selection bias inherent to the NPL decision process, which could plausibly be connected to racial issues as well. In future iterations I hope to expand the variable to include both funded and non funded sites as well as a control for epa intervention. Government intervention could mitigate the effect of polluted environments on linked fate.

³ Future iterations will also include the sites which have been proposed but not yet funded. Collection of this data is underway.

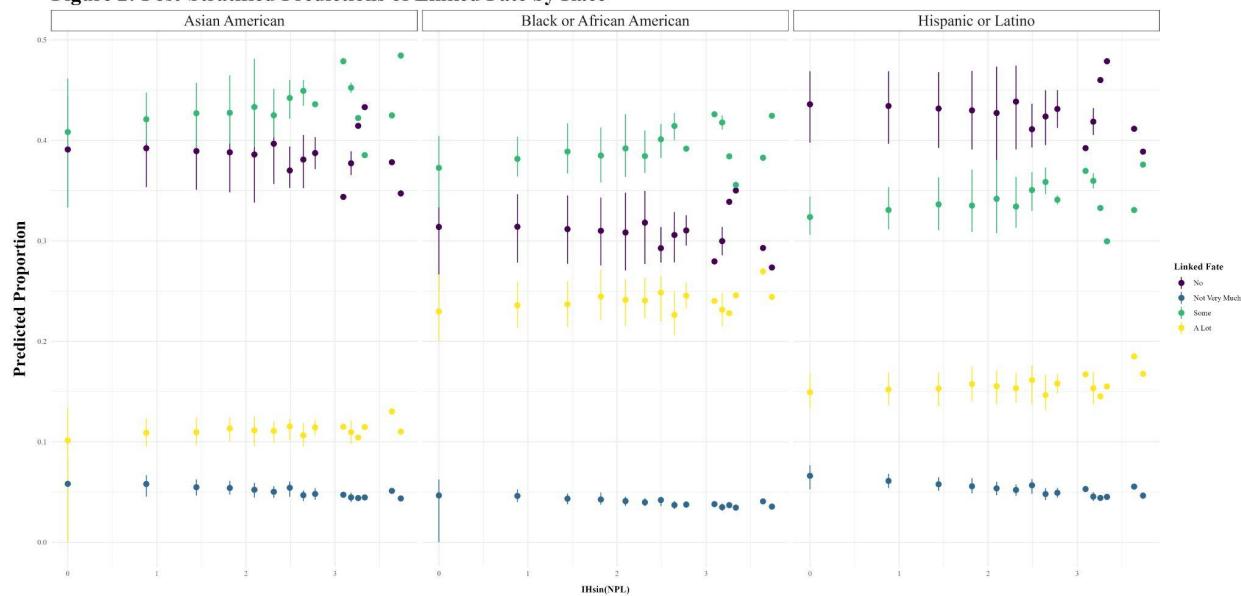
a 5 level nominal factor with the levels "Asian American", "Black or African American", "Hispanic or Latino", "White Non Hispanic", and "Other". This data comes from the CMPS for the first stage of the analysis and we rely on census data to estimate predictions of linked fate across the entire population. This process will be discussed in more detail below.

Method

This analysis relies on a Bayesian Multilevel Regression with Post-Stratification. This technique is an alternative to the more common pseudo-likelihood based weighting approach and is superior in this context because it relies on post-estimation adjustment of survey data to provide estimates which are more representative of the population than can be achieved by sampling techniques alone (Park, Gelman, and Bafumi 2004; Gelman and Hill 2007). This technique is the gold standard in using national survey data to estimate subnational public opinion (Caughey and Warshaw 2019; Lax and Phillips 2009a, 2009b; Tausanovitch and Warshaw 2014; Butz and Kehrberg 2016).

The first step of the process is similar to any other multilevel regression; it estimates the relationship between each of the types of respondents we have (based on a stratification of all of the predictors in the model; race, sex, and age category) and their level of linked fate. Then, census data is utilized to estimate county level estimates of the proportion of the population that would answer at each level of the linked fate outcome variable. I estimate the model via the probabilistic programming language Stan which implements the No-U-Turn sampler variant of Hamiltonian Markov Chain Monte Carlo (Carpenter et al. 2017; Hoffman and Gelman 2014). I run six Markov chains in

Figure 2: Post-Stratified Predictions of Linked Fate by Race



parallel for 12,000 iterations each. The first 6,000 iterations for each chain are discarded after the initial warm-up adaptation stage leaving us with 36,000 posterior samples for subsequent analysis⁴. For the post stratification stage, I rely on posterior expectations based on the full post-stratification table constructed from census data and the predicted marginal distributions for the linked fate measure. In this way, MrP adjustment allows for a generalization beyond the sampled respondents and to the broader population.

As can be seen from the Post-Stratified Predictions in Figure 2, this analysis does not provide any evidence of a relationship between NPL proximity and linked fate; however I believe that this result is at least in part due to the level of the analysis. It seems that at the county level there is not enough variation among respondents to show evidence of any relationship. It could also be that mere presence of an NPL site is not

⁴ Estimation is performed under R version 4.2.1 using the brms package (Bürkner 2017, 2018; R Core Team 2021), which serves as a front-end for regression models using Stan's implementation of Hamiltonian Markov Chain MonteCarlo.

enough and that instead the sites should be disaggregated. For these reasons, the next iteration of the analysis will be at the state level and will include an interaction between the number of NPL sites in the state and a measure of the aggregate severity of the sites.

Conclusion

This analysis attempts to bridge the bodies of literature surrounding climate politics and minority political behavior. I argue that because structural inequality is so tightly linked to the impacts of climate change, climate change should have an impact on the political behavior of racially and ethnically marginalized groups. As environmental degradation makes climate change a more impactful facet of human life, perceptions of group positionality and systemic environmental inequality will incentivize marginalized groups in affected areas to identify more strongly with their ethnic or racial identity and thus report a higher level of linked fate. Just as social identity influences environmental attitudes, so too should climate change influence identity and group consciousness. While this iteration of the analysis does not provide evidence of the relationship, I believe that this is due to a lack of variation at the county level. Further iterations will look at the impact that site severity might have on the analysis.

Figure 3: Map of NPL Sites and Predicted Proportions by Linked Fate for Black Respondents

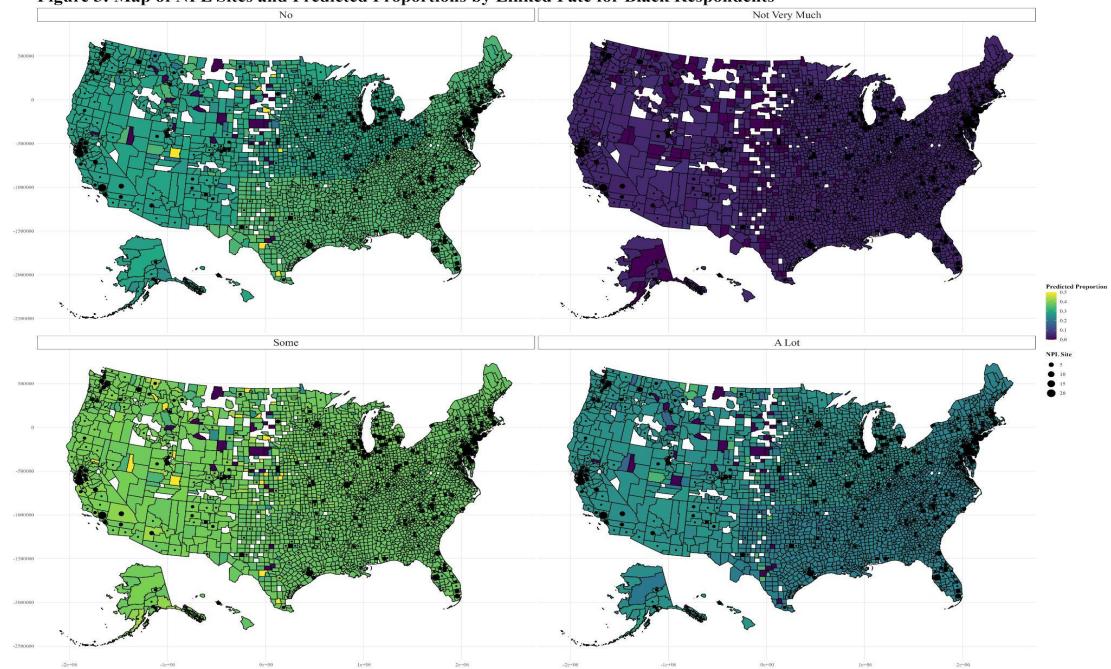


Figure 4: Map of NPL Sites and Predicted Proportions by Linked Fate for Latino Respondents

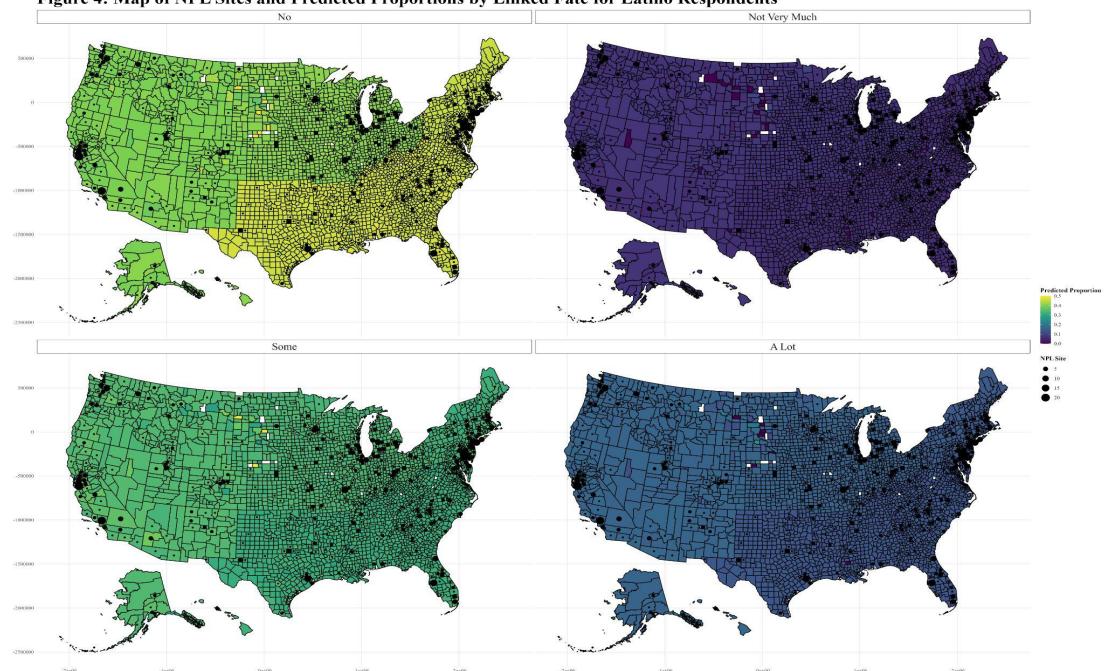
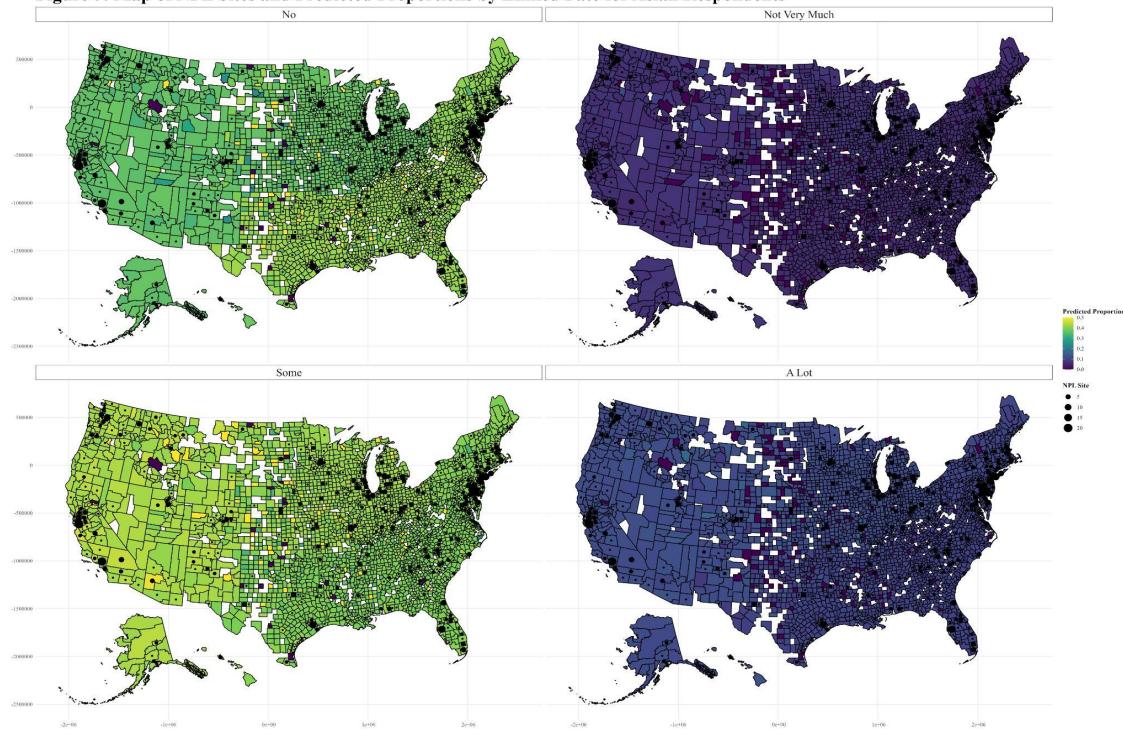


Figure 5: Map of NPL Sites and Predicted Proportions by Linked Fate for Asian Respondents



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Appendix 1: Epa Site Signage



Photo Credit: Kimberly Chandler, E&E NEWS



Photo Credit: Len Barcusky, Post-Gazette



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