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INTRODUCTION

As anthropogenic climate change progresses, its consequences are being felt all around the world. Sea levels are rising, extreme weather events are increasing in severity and frequency, entire ecosystems are under threat, livelihoods are at risk, and countless other effects are projected or already occurring (Smith et al., 2009). The world is changing in very tangible ways and humans are being forced to adapt to more severe natural disasters, resource scarcity, and increasingly inhospitable weather patterns. Whether voluntary or forced, migration is becoming an increasingly common adaptive strategy, and anywhere from tens to hundreds of millions of people may become climate migrants by the middle of the 21st century (Bardsley and Hugo, 2010). The ever-escalating consequences of climate change demand continuous inquiry to understand this dynamic issue. Thus, this research is concerned with the factors that influence migration as a response to climate change.

The target group is people that have or plan to migrate to, within, or out of the United States due to climate change. One study estimates that as much as 57% of all US adults believe that weather- or climate-related issues will have a significant influence on whether and where they move in the next decade (Kim et al., 2021). Overall, existing research on the influence of anthropogenic climate change on migration is limited and predominantly focused on the Global South. Indeed, a majority of environmental and climate refugees are fleeing from places such as sub-Saharan Africa (Myers, 2002) and most international migration that is motivated by environmental issues is South-North movement (Hugo, 1996). Comparatively little research exists on climate migration within and out of North America and other more developed countries. This imbalance is not surprising given the disproportionate impact of climate change on poorer and less developed countries, and the more immediate need for research on those areas. However, climate change is a global issue and Global North countries are not immune to its effects; the United States is already experiencing costly damages and millions are at risk of being displaced (Kim et al., 2021). Therefore, this study provides new insights into the issue of climate migration by focusing on the United States.

The specific research question which drives this study is: *In what ways do natural disasters, resource scarcity, and perceived climate inhospitality affect climate migration decisions?* This paper is organized as follows: First, it provides a theoretical context of the purpose of migration in relation to climate change, from which three hypotheses are proposed. Then there is a discussion of the methodology of this study and an analysis of the data. Lastly, conclusions are presented in the final section.

THEORETICAL STRUCTURE AND HYPOTHESES

The influence of perceptions of weather- and climate-issues on migration intentions has been studied before, and this study builds upon that research. Kim et al. (2021) found that the degree to which US adults believed that climate- or weather-related issues (not climate change explicitly) would influence whether they move to a new location in the next decade differed based on political affiliation and education level; democrats and the college educated were more likely to believe climate issues would have an influence on their decisions. Interestingly, geographic predictors, including region and coastal proximity, did not have an effect. What the aforementioned research lacked, however, was the explicit focus on climate change that is central to this study, and an exploration of the specific climate threats that motivate migration decisions.

In this study, migration is viewed as an adaptive response. Those who migrate in response to climate change have typically been referred to as "climate refugees," however this paper will use the term "climate migrants" as it aligns with the perspective that migration is adaptive, while "refugees" carries connotations of failed adaptation (Felli, 2012). Additionally, "climate migrant" can refer to both those who migrate voluntarily and those who were involuntarily displaced, while "climate refugee" refers exclusively to the latter (Berchin et al., 2017). Migration in this case can be defined as an ex situ adaptation, or an adaptation that moderates harmful effects or increases benefits by moving people away from places of vulnerability (Bardsley and Hugo, 2010). Those who migrate do so to diversify risk (Hunter et al., 2015), and those who migrate due to climate change are attempting to minimize specific kinds of risk. Previous research has identified that the risks prompting climate migration include natural disasters and drought (McLeman and Smit, 2006), resource scarcity such as shortages of food and water (Findley, 1994), and economic vulnerability (Bylander, 2013).

Climate change has psychological impacts that may influence migration as well. Coffey et al. (2021) described the concept of "eco-anxiety" as the fear, mental distress, and anxiety people experience in response to climate change and ecological crises. It may result from the perception that one's climate environment is becoming unbearably uncomfortable and increasingly inhospitable. Migration can be a strategy to cope with the uncertainty associated with eco-anxiety, however the current research is limited. Some research has found that communities reach a "threshold" at which point migration becomes an effective strategy (Bardsley and Hugo, 2010), while others contend that climate migration does not follow a linear "push-pull" model but rather results from the interaction of many broader contextual factors (Hunter et al., 2015). The existing research overall highlights the complicated nature of climate migration and the many factors that interact to influence migration decisions, revealing that climate change is seldom the only factor but can play a significant role.

NATURAL DISASTERS AND CLIMATE MIGRATION

Worsening natural disasters are some of the most visible consequences of climate change. Sloggy et al. (2021) found that natural disasters including floods, wildfires, and especially hurricanes have a significant impact on public opinion about climate change, increasing the likelihood that a person believes climate change is both currently occurring and caused by human activity. Previous research has found that natural disasters can lead to both internal and external migration (McLeman and Smit, 2006) typically as a proactive risk diversification strategy in anticipation of more natural disasters, not as a result of stress

from natural disasters that just happened (Bardsley and Hugo, 2010). Similarly, Paul (2005) found that natural disasters are not always immediately followed by out-migration as a consequence, especially when emergency aid counteracts the losses incurred. The likelihood of migration after natural disasters may also be influenced by how severe the natural disaster was; more severe natural disasters can be more encouraging of migration in response (Trinh et al., 2021).

Overall, the existing literature indicates that migration typically happens before natural disasters occur, in order to proactively avoid them, though it can also, less commonly, be a response to recent natural disasters. Because of the increasing visibility and awareness of climate change-related natural disasters and their effect on public opinion and migration, I propose the following hypothesis: *I expect to find that climate change-related natural disasters increase the likelihood of migration.*

RESOURCE SCARCITY AND CLIMATE MIGRATION

Climate change creates resource scarcity in numerous ways, whether it is through the destruction of livelihoods and land or a shortage of life-sustaining resources like food and water. Bylander (2013) found that climate change exacerbates droughts and flooding, both of which destroy crops, impacting populations whose livelihoods are largely agriculture-based and potentially interrupting food supply chains. Water scarcity is another particularly relevant issue; one study estimates that 2.4 billion people are currently at risk of water scarcity due to climate change (Gosling and Arnell, 2013). To some, migrating, even internationally, appears to carry less risk (economically and otherwise) than remaining in place. Repeated environmental shocks and increasing resource scarcity can change what a population thinks is safe, possible, or likely to be profitable, thus impacting migration decisions (Bylander, 2013). Considering all of this evidence, the following hypothesis is proposed: *I expect to find that resource scarcity increases the likelihood of migration.*

PERCEIVED CLIMATE INHOSPITALITY AND CLIMATE MIGRATION

Aside from natural disasters, the slower-onset impacts of climate change, such as coastal erosion or drought, can also encourage proactive climate migration (Zickgraf, 2021). Those with the resources may leave their places of origin if these slow onset changes begin to feel unbearable and oppressive, such as worsening heatwaves. Bardsley and Hugo (2010) identified that people migrate both because of *perceived* environmental threats and because of actual environmental degradation. Thus, the following hypothesis is proposed: *I expect to find that perceiving the climate as increasingly inhospitable increases the likelihood of migration.*

METHODOLOGY

In this section, I will explain the content and selection method for this content analysis study. All data was collected from Reddit posts and comments. Reddit is a text-based forum platform where people seek advice, express emotions and opinions, and share personal stories. This makes it ideal for exploring the factors that influence migration decisions. To collect relevant data, the following parameters were used: keywords including "climate refugee," "climate migrant," "climate change migration," and similar combinations were searched; all selected posts and comments were created within the last five years (March 2018-March 2023); and all included both references to climate change and discussions of personal decisions to migrate in or out of the United

States. A total of 30 were selected, including 5 posts and 25 comments. The selected posts and comments were then analyzed to reveal common themes and connections which will be explored in the following section. Potential biases in the data include: the possibility of selection bias, as Reddit is not perfectly representative of the general population; participation bias, as many people considering or undertaking climate migration may not be posting on Reddit; and language bias, as only English posts and comments were selected.

RESULTS

Careful analysis of the data revealed three main themes: first, a strong desire to avoid natural disasters; second, fears of resource scarcity; and third, feeling as though the climate was becoming inhospitable due to climate change. Many identified climate change as the main or only reason for their decision to migrate or consider migrating, while others reported that it was only one factor among many. Additionally, while the aforementioned three themes were present together in nearly all of the posts and comments, individuals varied in which factor was most influential and important to them.

The first major motivator of climate migration identified in the data was natural disasters. This focused code emerged from the initial themes of hurricanes, floods, and wildfires, as well as environmental hazards such as wildfire smoke. The general consensus was that climate change was exacerbating these events and the effects were threatening to one's health, property, safety, and peace of mind. A common complaint for many was wildfire smoke, which contributed to poor air quality that harmed those with lung conditions. For example, this individual specifically struggled due to asthma:

> "I keep considering moving due to the wild fire smoke. It kills my asthma and I worry about my kids. I'm not sure exactly where I'd go though."

Others had no particular conditions but worried that the smoke was damaging to their lungs and threatening to their health in the long-term:

> "I live in California and I really think the whole west coast is becoming more increasingly unlivable with the yearly fires. At this pace everyone here will have lung cancer at some point."

Additional concerns included hurricanes and flooding. Some individuals, after having been repeatedly barraged by hurricanes, accepted that the best adaptive choice for them was migration. Others had not yet experienced hurricanes or climate change-related natural disasters directly but still found them to be a compelling reason to migrate because the area they lived in was considered high risk. These findings indicate support for my first hypothesis: *climate change-related natural disasters increase the likelihood of migration.*

The second focused code that emerged from the data was resource scarcity. Resource scarcity, in this instance, refers to not just the scarcity of food and water, but also of aid and disaster relief funds provided by the government. Unsurprisingly, the primary concern for many was water scarcity. Given that climate change is exacerbating drought conditions in many areas, the dwindling availability of drinking water was a significant factor in migration decisions and evoked feelings of competition in some individuals, whether with new people moving to the area or with the agriculture industry:

> "Phoenix, AZ area here. I have no doubt that it will be necessary to move in the future due to water shortage. The first water cuts start next year to farmers, but with lots of houses being built here more people are living here and causing supply to dwindle even more."

A sense of competition also was evident with regard to government aid and relief. Some had to fight for access to relief after disasters and others felt that there simply were not enough resources available to adequately prepare all vulnerable areas to withstand the consequences of climate change:

> "Aid was not set up [ahead of] time so we are - yet again - fighting a bureaucracy hoping for scraps, while we deal with flash flood alerts from a regular afternoon rain storm and watch for the other storm developing in the Gulf."

> "Norfolk, VA implemented a coastal resilience project recently that is protecting 700 homes at a cost of $120 million. And there are millions of people living along 84,000 miles of coastline in the US. There is not enough money to go around."

As the comments above suggest, many felt deeply distrustful of the government's ability to both adequately respond to, and proactively prepare for, the impacts of climate change. This was partly due to resource scarcity but also arose from the belief that the government would inevitably fail to "get their act together in time," and thus could not be relied on to distribute resources or even provide enough of them. Migration then offered a proactive strategy for individuals to take matters into their own hands, protect their families, and seek out the resources they needed. These findings suggest that my second hypothesis is supported: *resource scarcity increases the likelihood of migration.*

The third and final focused code was perceived climate inhospitality. Circumstances that individuals found inhospitable included weather events that caused discomfort, such as heat waves, as well as climatic patterns that felt unpredictable and unfamiliar. Additionally, slow-onset changes such as sea level rise played a role. Overall, individuals cited events like brutal heat waves most frequently, suggesting that excessive heat was the least tolerable condition. On its own, many were already accustomed to heat. However, the increased occurrence and longer duration of heat waves due to climate change caused many to find the heat unbearable and inhospitable, as this individual explains:

> "...there are several reasons my wife and I are moving. Top among them is that Utah is getting hotter and hotter every year. When I was growing up, we would have maybe a day or two over 100 degrees. Most years we wouldn't have any. Now, we get a full month of triple digit heat. It's unbearable."

Many others noted that the climate in their area had noticeably changed in their lifetimes, or within only the last few years. Recognizing this change caused an increase in eco-anxiety and negative predictions for the future. As climate change progressed and began to have a tangible effect on their day-to-day lives, this anxiety created a sense of urgency and desperation to migrate and escape. Overall, virtually none of the individuals felt hopeful for what was to come; dread and fear predominated. Many felt that migration would become unavoidable and the climate was headed toward nothing short of dystopia:

> "5th gen Oregonian here. In my lifetime I've seen our winters become shorter and dryer. My family is making a 3 year plan to move near the border of Canada. As a kid I got to see some pretty cold winters but now? Shorter and dryer winters. I've been watching Mt. Hood turn brown over the decades. Gone are the years where it would stay white all year. Hood meadows would open early and often close due to too much snow. The rivers are always low. Our Reservoirs [are] always low. Oregon used to be so much greener. I honestly think the good times are over. We have started the prologue of our dystopian future."

> "I'm currently living in the middle of a kind of terrible part of California and I'm watching as it turns into a dystopian hell on earth. It was already a shitty desert but it's gotten hotter and hotter. I'm worried that the longer I'm here the less I'll be able to sell my stupid house for and eventually it'll be totally inhospitable to human life and I'll simply have to abandon it."

Considering these results, my third hypothesis appears to be supported: *perceiving the climate as increasingly inhospitable increases the likelihood of migration.*

DISCUSSION AND CONCLUSION

Climate change has taken center stage in American consciousness in recent decades and continues to be an imperative issue. In order to cope with eco-anxiety and achieve some sense of control in this existentially threatening situation, many are choosing to migrate. This study aimed to explore the relationship between climate change and migration in the United States through the lens of eco-anxiety (Coffey et al., 2021) and migration as a risk-minimization strategy (Hunter et al., 2015). This study differs from most previous research in that it explores the feelings and motivations that lead to proactive migration in response to climate change, rather than instances of involuntary displacement after disasters and environmental crises. The data reveals how people feel about climate change, how they perceive their environment, and in what ways those perceptions influence their migration decisions.

In agreement with Bardsley and Hugo (2010) as well as my hypotheses, both experienced and perceived climate change impacts had an effect on individuals' migration decisions, confirming that direct exposure is not strictly necessary to motivate climate migration. Building on the findings of Kim et al. (2021), it is evident that climate change is a notable factor that Americans are taking into account when deciding when, where, and whether to move. This study expands on previous findings by determining why and in what ways specific climate change issues are influencing migration, finding that natural disasters, resource scarcity, and perceived climate inhospitality are the strongest motivators. However, a weakness of this study is the omission of sociodemographic variables; due to the nature of the methodology, it was not possible to record and integrate socio-demographic information which could have possibly influenced the results and provided important insight. Additionally, the small sample size and qualitative focus make generalizations unreliable. For those reasons, despite promising results, the data must be interpreted with caution and more research is needed to identify whether certain demo-graphic variables play a role.

Overall, the findings of this study indicate support for my three hypotheses and demon-strate that natural disasters, resource scarcity, and perceived climate inhospitality increase the likelihood that an individual will consider

climate migration. The greater prevalence of natural disasters, the dwindling water supply, lack of adequate aid, and increasingly scorching or otherwise unbearable climates appear to be the main motivators for climate migration in the US. We can expect that people will migrate at higher rates from areas that are most impacted by wildfires, hurricanes, droughts, and excessive heat. The findings also suggest that internal migration may be more favorable and common than international migration. The prevalence of distrustful attitudes toward the government indicates that climate migration decisions are influenced not only by perceptions of climatic conditions but also by the degree to which people feel the government's inaction and inadequacy makes them more vulnerable. When undertaken voluntarily and proactively, climate migration in the US appears to be an empowering strategy used to manage eco-anxiety and regain a sense of control over a seemingly existential and "dystopian" situation. In sum, this study provides valuable insights into the complex factors that motivate climate migration in the United States, highlighting the need for more effective policies and strategies to address the growing challenges of climate change and its impacts on human migration.

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