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The Effect of Slow-Onset Climate Change on Migration Decisions

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Abstract

What explains why people choose to stay or emigrate in the face of slow-onset climate change? We leverage an original survey of prospective migrants who are exceptionally vulnerable to threats from climate change, but who possess the freedom to legally migrate to another country with relative protection from environmental degradation. Using a conjoint experiment, we assess subjects' latent preferences before they depart by asking them the circumstances under which they would be more likely to move, given a set of randomly varying conditions representing migration push and pull factors. Our findings show that direct climate risks play a minimal role in prospective migrant decisions, with family- and health-related considerations being much stronger drivers. Our results ground climate mobility more firmly in the context of other migration and mobility decisions, and question widespread concern about the potential for slow-onset environmental degradation to directly produce massive flows, a significant consideration for future climate refugee programs.

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Introduction

Every spring, farmers seed a new harvest in Ethiopia's Tigray region even as the edge of the Sahara Desert creeps further southward. Every summer, Bangladeshi villagers wonder if the once-predictable monsoon floods—critical for soil fertility and renewal—will bring devastation or drought to the Brahmaputra River delta. And every autumn, Latin Americans build new homes near the Caribbean and Pacific coastlines even as tropical cyclones intensify. These individuals and their family members are often conscious of the risks of environmental degradation but choose to adapt in place.

Millions of their relatives and neighbors choose to adapt by migrating elsewhere—to higher land, to growing cities, but increasingly, to foreign countries. A 2018 World Bank report projected 143 million people from sub-Saharan Africa, South Asia, and Latin America will be forcibly displaced by weather events before 2050 (Rigaud et al. 2018). As environmental hazards intensify worldwide, many activists, institutions, and governments are bracing themselves for waves of permanent international migration spurred by environmental degradation attributable to flooding, droughts, and rising sea levels (Fisher 2024; Huang 2023).

However, the relationship between environmental change and emigration remains opaque (Adams 2016; Campbell 2014; Mortreux and Barnett 2009) due to a number of methodological challenges associated with these phenomena. First, studies that examine migrants' decision-making are often conducted after migrants arrive in a destination state, introducing the possibility of inaccurate, post hoc reasoning and selection bias associated with those who complete their journey and successfully resettle (Schewel 2019). Second, among studies of prospective migrants still in their countries of origin, their international mobility is conditional on asylum regimes that do not recognize climate change as a justification for humanitarian protection (Huckstep and Ginn 2023), with the recent exception of 280 annual visas provided by the Australia-Tuvalu Falepili Union treaty. Even if such respondents wish to emigrate, there are rarely opportunity structures in place, making it challenging to simulate their calculations in a future scenario that facilitates their mobility. And third, many environmentally stable destinations for would-be climate change migrants are also associated with other desirable attributes, such as strong labor markets, higher wages, and the presence of a coethnic diaspora—each of which are theorized to motivate emigration (Ferwerda and Gest 2021; Gest and Boucher 2021; James and Mayblin 2016; Van Der Velde and Van Naerssen 2015). This makes it difficult to discern the relative weight of different push and pull factors, particularly when local environmental degradation is not acute.

In this study, we address these challenges by leveraging an original survey experiment of potential prospective migrants in a setting that simulates a policy environment

that grants refuge to people subject to the effects of climate change. The Federated States of Micronesia (FSM) is unique in the world of sovereign countries. Thanks to an exceptional treaty, citizens of the FSM—as well as those from the Republic of the Marshall Islands and the Republic of Palau—can freely enter and settle in the United States as nonimmigrants without visas. Micronesia's islands are far poorer than the country to which its citizens have unfettered access. Moreover, the FSM is vulnerable to rising sea levels and intensifying tropical storms. A recent United Nations analysis found that a combination of environmental vulnerability and dependence on international flows of people and capital—tourism, remittances, and foreign investment—makes countries like the FSM among the most vulnerable economies in the world (Assa and Meddeb 2021; also see Ratha et al. 2016).

Leveraging this unique setting, we conducted an original survey with an embedded conjoint experiment to assess the latent preferences of Micronesians—all of whom are eligible to migrate to the United States—before they ever depart. Conjoint analysis is a survey technique that employs randomization and repeated choice tasks to identify respondents' latent preferences. Drawing on a sample from Chuuk—Micronesia's most populous and topographically diverse state—we asked respondents to report the circumstances under which they would be more likely to move to the United States, given a set of randomly varying conditions representing push and pull factors hypothesized to drive such decisions.

Our results offer new evidence about the way potential climate migrants weigh different considerations, pressurized by the risk of environmental disaster and with easy access to a desirable migration destination. Our study participants were, on average, 35 percent more likely to indicate a desire to migrate if facing a serious health problem, 24 percent more likely if a family member would welcome them in the destination country, 9 percent more likely if they were offered a job in the destination country, 5 percent more likely if they faced a reduction in their income in the FSM, and only 4 percent more likely to migrate if they expected increased exposure to severe climate events in their country of origin. These results do not change when disaggregated to those who live at or near sea level, nor among those randomly assigned to receive a short article outlining the treacherous environmental risks currently facing Micronesia. Additionally, and consistent with the above, we find that only 7% of respondents implicitly rank direct environmental risks attributable to increasingly severe climate events as the top factor driving their migration decisions, with an overwhelming majority instead ranking either health concerns or family obligations first.

These findings exhibit the minor role that direct environmental risks play in Chukeese decisions to leave their vulnerable islands, despite people's acute awareness of the hazards and their *carte blanche* access to the United States. Previously, scholars have observed environmental hazards to be relevant but not necessarily determinant or direct drivers of migration and other mobility or immobility decisions (see, e.g., Boas, Dahm, and Wrathall 2020; Everuss 2023; Tschakert and Neef 2022; Wiegel et al. 2021). But placed in context, other factors such as work, health, and family obligations, take precedence over environmental considerations in life-

altering decisions—much as scholars have found in regions less affected by global climate change. This discovery runs contrary to many governments' concerns about controlling future climate change mobility (Brown 2008). It also exhibits the potential for conflating the so-called climate refugees with conventional voluntary migrants, as people ostensibly motivated by job loss, income loss, or health problems may be subject to the indirect pressure of slow-onset environmental degradation.

In the next section, we discuss the state of the field focusing on the connection between environmental risks and migration decisions. In "Data and Research Design" section, we discuss our survey data and experimental research design. "Descriptive and Experimental Results" section begins with a descriptive analysis of our survey data followed by our main results from the conjoint experiment. Finally, "Discussion" section clarifies our conclusions and discusses their policy implications.

State of the Field

International migrants' decision-making is understood to be driven by people's preferences and the opportunity structures that constrain or facilitate their mobility (Boucher and Gest 2018; Carling 2002, 2004; Castles, de Haas, and Miller 2013; Creighton 2013; De Haas 2010; James and Mayblin 2016; Mayda 2010; Thielemann 2008; Tjaden, Auer, and Laczko 2018; Van Der Velde and Van Naerssen 2015). Given that these opportunity structures may change over time, a better understanding of predeparture preferences would allow scholars and policymakers to better anticipate future migration patterns and provide insight into how demand for destinations might vary if restrictive admissions policies were relaxed (see Ferwerda and Gest 2021). However, because most scholarship on the motivations for migrant departures and their selection of international destinations is specifically focused on voluntary migrants, it is not thought to fully apply to migrants confronting severe environmental hazards that to various extents compel their departure.

Environmental factors are widely acknowledged to play a role in household-level decisions to emigrate (see Warner et al. 2010). According to recent meta-analyses based on several hundred cross-disciplinary and methodologically mixed sources,[1] slow-onset environmental events commonly lead to either voluntary migration (both temporary and permanent) or immobility, and the most common migration outcomes of fast-onset events are involuntary migration and short-term, short-distance

[1] Most of the hundreds of studies heretofore have used case studies, often focused on specific locations vulnerable to the effects of climate change, where livelihoods are more reliant on natural resources. (See Climig Database Project, last updated March 2020, retrieved April 18, 2023, from https://climig.com/, and Ghosh and Orchiston 2022.) However, a recent review of 127 studies pointed to an increasing number of quantitative empirical studies on climate-induced migration, which rely on a mix of methods and data sets to understand individual-level decision-making and aggregate trends (Hoffmann, Šedová, and Vinke 2021).

movements (Cattaneo et al. 2019). But it is unlikely that increases in international migration flows are ever singularly due to slow-onset climate change (Millock 2015).[2] As a result, just as voluntary migrants' departures may be motivated by a mix of social, economic, and political considerations, people classed as climate change migrants[3] are also likely to consider conventional push and pull factors amid the unique pressures of environmental degradation.

In fact, the notions of "climate migrants" or "climate refugees" are themselves contested. The mobilities literature (e.g., Boas et al. 2018; Boas et al. 2019; Boas, Dahm, and Wrathall 2020; Everuss 2023) notes that traditional scholarship on climate change has tended to focus, implicitly or explicitly, on the idea of forced physical displacement of bounded and static communities and critiques its alarmist predictions of mass migration flows and their securitization (see also Boas and Wiegel 2021). Instead, this literature advocates for a broader perspective that begins by acknowledging that human mobility (local or international, temporary, or permanent) exists independent of climate change. As such, it emphasizes the diverse ways in which people respond to climate change and environmental risks. Importantly, this literature pays particular attention to voluntary immobility—the choice to remain—in the face of slow-onset environmental degradation, highlighting the importance of sociocultural identity, family ties, and attachments to place (Farbotko et al. 2020; Farbotko and McMichael 2019; Farbotko, Stratford, and Lazrus 2016; Hauer et al. 2020; Kelman et al. 2019; Mallick and Schanze 2020; Mallick, Priovashini, and Schanze 2023).[4]

Micronesians are not exempt from the push and pull factors observed elsewhere around the world. Thanks to frequent and direct communication with friends and relatives already in the United States—principally Guam and Hawai'i and a growing number on the mainland—many are tempted to reunite with their loved ones abroad, who often assure them of housing and guidance upon their arrival (Aguilera and Massey 2003; Drever and Hoffmeister 2008; Korinek, Entwisle, and Jampaklay 2005; Massey 1990; Massey and España 1987; Munshi 2003; Portes and Zhou 1993). Through these dense social networks, Micronesians are acutely aware of wage differences and labor market conditions that are known to motivate migration choices (De Giorgi and Pellizzari 2009; Geis, Uebelmesser, and Werding 2013; Harris and Todaro 1970; Sjaastad 1962; Stark and Bloom 1985; Taylor 1987). And they actively consider the availability of public health care facilities that address illnesses and conditions untreatable in Micronesian hospitals (Agersnap, Jensen, and Kleven 2019; Boeri 2010; De Giorgi and Pellizzari 2009; Freeman 1986; Péridy 2006; Warin and Svaton 2008).

[2] Some researchers argue otherwise (El-Hinnawi 1985; Gray and Wise 2016; Myers 1993).

[3] Little academic consensus exists for characterizing "climate change migrants" (see, e.g., Nishimura 2015).

[4] See, also, Neef, Pauli, and Salami (2024).

However, the salience of direct environmental pressures relative to these more established drivers of voluntary migration such as family reunification, poverty, job prospects, or health is unclear[5] because earlier studies have faced three significant methodological challenges (Adams 2016; Campbell 2014; Mortreux and Barnett 2009). First, research on migrants in destination states is normally subject to selection bias because settled migrants do not reflect the pool of future migrants to those states; they are a subset (Carling 2002, 2004; De Haas 2010). Their successful migration may correspond to certain psychological predispositions, unobservable resources, or admissions regimes (Boucher and Gest 2018; Guiraudon and Joppke 2003; Schewel 2019). Additionally, they may engage in post hoc reasoning when asked about the factors that originally motivated their departure.

Second, among studies of prospective migrants still in their countries of origin, their international mobility is conditional on asylum regimes that do not recognize climate change as a justification for humanitarian protection (Huckstep and Ginn 2023). As of 2025, the only program of this kind was created by the Australia-Tuvalu Falepili Union treaty, which entered into force in 2024, and provides a pathway for 280 Tuvalu citizens per year. Beyond this exception, if our interest is to better understand the drivers of climate mobility, researchers must inquire about subjects' migration preferences without an actual migration opportunity facilitated by a supranational treaty or visa program that would permit their resettlement (Huckstep and Ginn 2023). As a result, subjects' emigration, if pursued, would likely be irregular—potentially distorting the true appeal of departing.

Third, many environmentally stable destinations for would-be climate migrants are also associated with other desirable attributes such as strong labor markets, higher wages, and the presence of a coethnic diaspora—each of which are theorized to motivate emigration (Ferwerda and Gest 2021; Gest and Boucher 2021; James and Mayblin 2016; Van Der Velde and Van Naerssen 2015). This means that directly querying prospective migrants will not yield a clear determination of the extent to which each factor drives the ultimate choice to depart.

Data and Research Design

We address the methodological challenges in the literature by studying the latent preferences of prospective migrants in the unique setting provided by the Federates States of Micronesia, a country with two main characteristics that make it an ideal case to study. First, thanks to the Compact of Free Association, Micronesian citizens—together with those of the Republic of the Marshall Islands and the Republic of Palau—are free to enter and settle in the United States as nonimmigrants without visas. This allows us to study prospective migration decisions

[5] And without international law recognizing it, there is no conventional definition of what even constitutes a climate change migrant (See Asian Development Bank 2011).

free from legal hurdles to mobility (a goal that climate visas would attempt). Second, the FSM is highly vulnerable to rising sea levels, increasing frequency of king tides, and intensifying tropical storms. Additionally, the opportunities for internal migration in the FSM are relatively limited, given the geography of the country and societal norms on kinship and land ownership. Thus, the FSM, as a case study, combines strong environmental push factors for emigration with limited legal barriers and restricted alternative forms of mobility.

Our data come from an original survey of 502 Micronesian citizens from the state of Chuuk—Micronesia's most populous state—across multiple islands though primarily on the main island of Weno, which serves as a meeting place for those from other islands. Surveys were also conducted in the lagoon islands of Eot, Parem, and Tonoas. With the FSM population estimated to be 100,319 (2023 est.)[6] and about half residing in Chuuk, the sample represents 0.5% of the total population and around one percent of the Chuukese population. The survey was conducted between January and September 2023 by five enumerators recruited from the local population. The enumerators were trained by the researchers to administer a Qualtrics survey using researcher-provided iPads. Most of the surveys were conducted in English, but enumerators interpreted portions into Chuukese upon participants' requests. Respondents were provided a culturally appropriate gift for their participation.

Given the challenges of administering surveys in the Chuukese context—an archipelago without reliable access to internet, mobile phones, and a population that moves between homes and islands—the sampling was not probabilistic. Instead, enumerators drew respondents from diverse public areas that are visited by a wide range of Chuukese adults: a boat harbor, a medical center, a popular supermarket, an airport, government facilities, churches of different denominations, as well as the *uut*—a derivative of a canoe house—in multiple villages. The variety of locations contributed to a convenience sample the composition of which reasonably approximates the Chuukese population. Appendix A provides a comparison of our sample and the Chuukese population for selected variables.

Administrators collected data about a variety of common demographic characteristics including gender, marital status, religious affiliation, education level, income, home and land ownership, health, employment, family dependents, internet access, news consumption, and social media consumption. Respondents also reported any plans to move to a different country and any steps they have taken in preparation. Additionally, respondents were asked whether they have family in the United States (the preferred destination country), how often they communicate with them, whether these relatives encouraged them to move, and whether they could host them on arrival. Respondents were asked about their perceptions of personal exposure to risks associated with rising sea levels, typhoons, extreme temperatures, and

[6] See https://www.cia.gov/the-world-factbook/countries/micronesia-federated-states-of/

droughts and flooding events. They then evaluated the seriousness of climate change and reported their level of personal risk aversion.

An Experimental Approach

The core of our research design is a conjoint survey experiment designed to determine the extent to which different factors drive Chuukese citizens to migrate. Conjoint experiments have been applied in a variety of fields, in many cases to assess attitudes toward immigration (Clayton, Ferwerda, and Horiuchi 2021; Ferwerda and Gest 2021 Hainmueller and Hopkins 2015; Hedegaard 2022). In our application, respondents are presented with a series of paired hypothetical scenarios. Each scenario is composed of five attributes, each of which can take two values (see Table 1). The value of the attributes in each scenario is fully randomly assigned. Respondents are first asked to indicate the scenario under which they would be more likely to emigrate. Following that, respondents are also asked to rate, on a scale from 1 to 7, how likely they are to migrate under each of the scenarios, beginning with the scenario they chose. Each respondent completed a total of 5 paired comparisons.

For each scenario, the value of each of the attributes and the order in which the attributes are displayed was randomly assigned. By randomly assigning the value of the attributes, it is possible to estimate the Average Marginal Component Effect (AMCE), by averaging across the possible combination of all other attributes included in the experiment (see Bansak et al. 2022). Based on the power analysis for conjoint experiments from Schuessler and Freitag (2020), our design has a power of 99.9% to detect effect sizes of 0.1 at the 5% significance level. In addition to AMCEs, we also calculate Average Component Interaction Effects (ACIE), to determine how other factors influence the impact of the conjoint attributes. Finally, we also estimate Individual Marginal Component Effects (IMCEs) following

Table 1. Conjoint Attributes and Values.

Attribute	Stay value	Leave value
Climate	FMS expects typical weather events.	More natural disasters are expected to hit FSM.
Family	Your family remains in the FSM.	A family member moves to the US.
Health	Your health remains the same.	You develop a serious health problem needing treatment.
Job	You don't know what kind of job you'll be offered in the US.	You are offered a job in the US.
Money	You earn your usual money in Micronesia	You start earning less money in Micronesia.

recommendations published by Zhirkov (2022). Individual Marginal Component Effects allow us to estimate individuals' latent valuations of the different attributes in the conjoint.

In addition to the conjoint experiment, our survey includes an informational intervention designed to prime some respondents about Micronesia's exposure to climate change-induced risks. Assigned to respondents in advance of the conjoint, the informational primer was formatted like a news article using accurate information derived from a World Bank report. Half of our respondents were randomly assigned to receive this informational primer, while the other half were not exposed to any further information.

Descriptive and Experimental Results

Our analysis of the nonexperimental portion of our survey data shows that approximately 15% of Micronesians in our sample have made plans to migrate in the near future. And despite their unique setting and access to the United States, Micronesians' migration decisions are motivated by factors similar to those motivating departures in other locations around the world—including a sense of environmental precarity.

Chukeese citizens are generally aware of the environmental risks posed by climate change, and their perceptions of personal risk exposure correlate with their topographical setting. Of respondents who report personal risk perceptions in the highest tercile, 75 percent reside on low-laying land near sea level, while 25 percent live at some elevation. Of respondents who report personal risk perceptions in the lowest tercile, 55 percent live at sea level and 45 percent reside at some elevation (see Figure 1).

Personal risk perceptions about climate change are also correlated with respondents' plans to migrate. Those in the highest tercile of risk perceptions are twice as likely to have made plans to migrate compared to those in the lowest tercile; 13.8% of respondents in the lowest risk perception tercile have made plans to move, while 25.2% of respondents in highest tercile of risk perception made such plans. However, the relationship between risk perception and migration plans is moderated by beliefs in God's protection from environmental disasters: those who strongly doubt God's protection are 33.4 percentage points more likely to have made plans to migrate compared to those with stronger faith (see Figure 2).

Beyond environmental considerations, family and kin group play a central role in Micronesians' identity, economic security, and personal growth (Hezel, 2013: 167). Accordingly, we find that respondents in frequent contact with family in the United States are 13.1 percentage points more likely to plan to migrate, compared to respondents without any family in the United States. Additionally, those encouraged by family to migrate are 25.9 percentage points more likely to have made migration plans (see Figure 3).

Material well-being also correlates with respondents' plans to emigrate. Respondents in the lowest income level (below 250 USD per month excluding

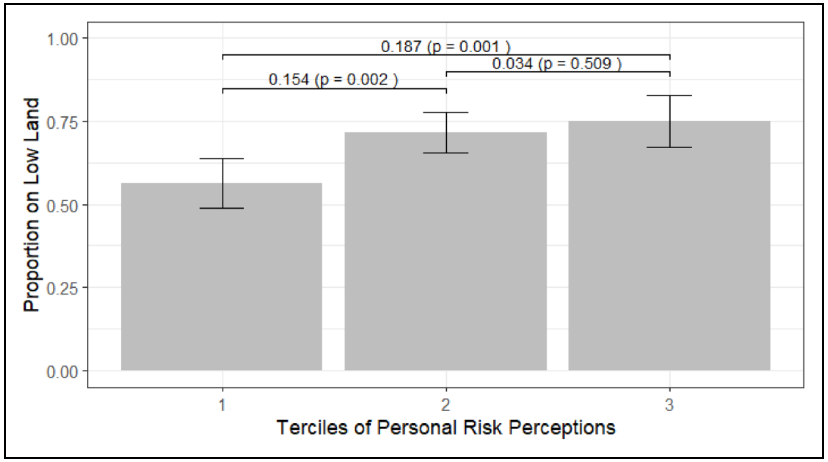


Figure 1. Personal Climate Risk Perceptions and Living on Low Land.

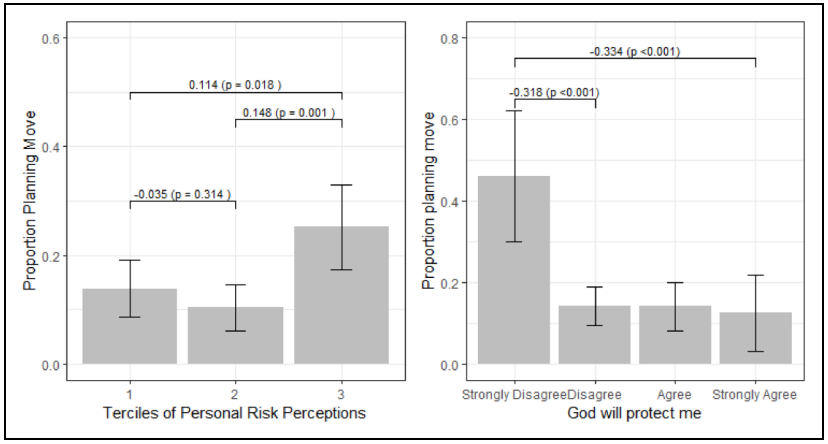


Figure 2. Risk Perception, Emigration Plans, and Belief in God's Protection.

remittances) are 23.1 percentage points more likely to have made plans to migrate, compared to those in the highest income bracket (over 1,000 USD per month). Similarly, respondents currently looking for a job are more likely to have made plans to migrate, compared to those who are not looking for job—an 11.4 percentage point increase in likelihood to migrate among those currently employed, and a 19.1 percentage point increase among those who reported being jobless (see Figure 4).

Healthcare needs may also motivate migration, as physicians are scarce in Micronesia, and healthcare facilities are often not equipped to treat common life-

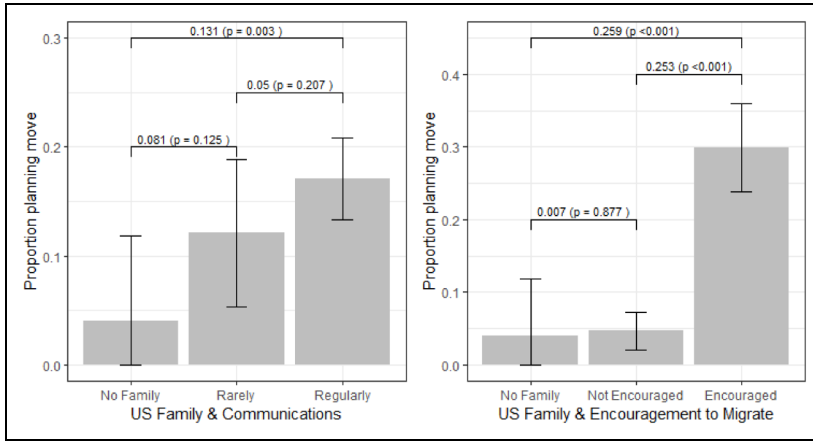


Figure 3. United States Family Connections and Plans to Emigrate.

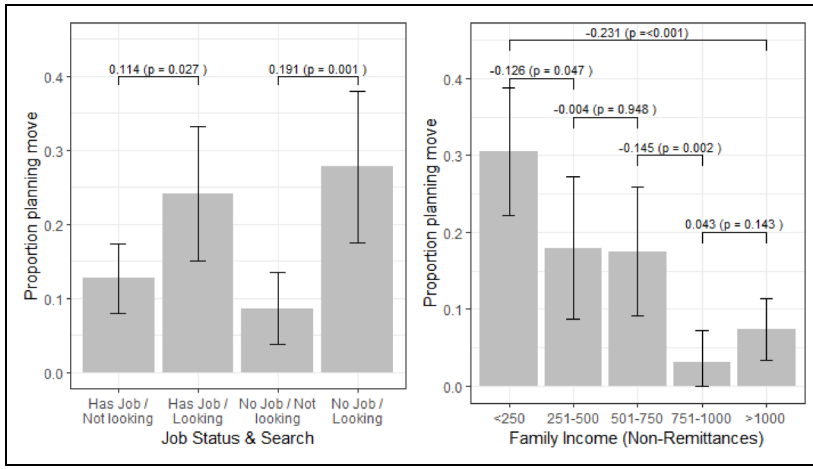


Figure 4. Income, Jobs, and Plans to Emigrate.

threatening conditions. Moreover, the FSM government refers and subsidizes some cases to the United States and occasionally the Philippines. Unsurprisingly then, we find that respondents who report being in good health are less likely to report plans to migrate. However, the relationship between health and migration plans is not entirely clear, as respondents reporting a "fair" level of health are more likely to have made plans to migrate than those in bad or good health. But those in "fair" health may be more able to travel and more confident in their job prospects (see Figure 5).

Experimental Results

While the correlational evidence shows that all five attributes in our conjoint are plausible drivers of Micronesian's migration decisions, they do not reveal the relative weight they hold in the minds of prospective migrants, nor do they account for the fact that these factors covary. The conjoint experiment, however, permits just such a calculation. Figure 6 presents AMCEs and 95% confidence intervals for each of the five conjoint attributes based on the forced-choice response between the two scenarios as well as the scale follow-up question.

We find that all attributes have a statistically significant impact on migration decisions. Because the findings from the forced-choice and our 7-point scale of preference intensity are consistent with each other, we focus our discussion on the forced-choice item, which is easier to interpret.

According to a hierarchy of revealed preferences, our Chukeese respondents are most sensitive to push and pull factors related to their health. We find that respondents are 35 percentage points more likely ($p < 0.001$) to indicate a desire to migrate in a scenario in which they were to face a serious health problem, compared to one in which their health remains the same. Additionally, respondents are 24 percentage points more likely ($p < 0.001$) to indicate a desire to migrate in a scenario in which members of their own family were to migrate to the United States beforehand.

Attributes related to economic well-being also influence Micronesians' desire to migrate but to a lesser extent. We find that respondents are 9 percentage points more likely ($p < 0.001$) to migrate if they were offered a job in the United States,

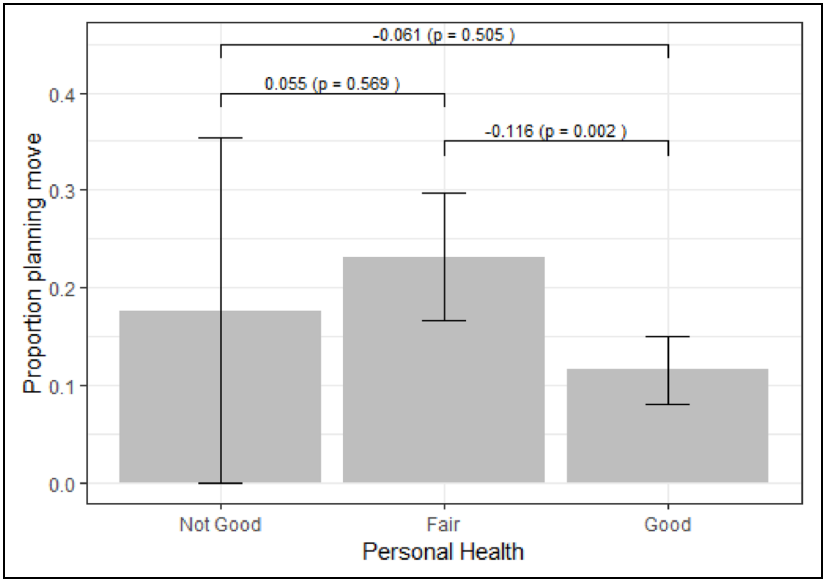


Figure 5. Health and Plans to Emigrate.

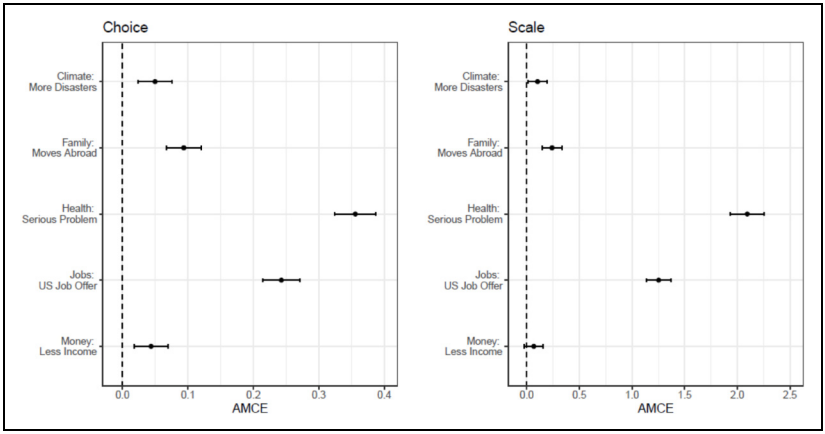


Figure 6. Average Marginal Component Effects for Forced Choice and Scale.

compared to a scenario without such an offer. Additionally, respondents were 4.9 percentage points more likely to migrate if their income in Micronesia dropped.

In the context of trade-offs with other push and pull factors, climate change–induced environmental degradation has the smallest effect on migration choices of the attributes in our experiment. Respondents are 4.3 percentage points more likely ($p < 0.001$) to migrate if extreme weather events were to become more common, compared to a scenario where their exposure to environmental risks is unchanged. It is important to note that this attribute measures the direct impact of environmental degradation (a potential risk in the future) on migration decisions but does not measure the indirect impact that environmental degradation may have on migration decisions by influencing health, economic well-being, or other intermediating factors that are more immediately or personally experienced.

To further understand the relative importance of the different attributes in our conjoint experiment, we estimated the relative value that each respondent implicitly attached to each one of them. In order to do this, we relied on IMCEs, which can be estimated for each respondent due to the repeated presentations of the conjoint choices. After obtaining the relative value attached to each attribute by each respondent, we obtain attribute rankings for each participant. Table 2 shows the rankings of the different attributes. Our findings show that only 7% of respondents implicitly value the climate attribute above all others, whereas 35.1% of respondents implicitly rank the climate attribute as the least important for their migration decisions. Combined with the AMCEs presented in Figure 6, these results show that not only is the climate component, on average, the weakest driver of migration decisions, but that there is, but that there is little heterogeneity across individuals: more than half of the sample implicitly ranks the climate attribute fourth or fifth, whereas only 19% rank it among the two most valuable attributes.

The findings in Table 2 also highlight the importance of the health and family components of the conjoint experiments: 78.3% of respondents were implicitly

Table 2. Individual Ranking of Attributes Based on Individual Marginal Component Effects.

Rank	Climate	Family	Health	Job	Money
First	7.0	14.8	67.1	11.0	8.0
Second	12.0	46.3	11.2	14.4	14.0
Third	20.2	18.6	8.8	26.3	24.2
Fourth	25.7	11.6	6.2	24.8	29.7
Fifth	35.1	8.6	6.6	23.4	24.0

motivated by access to healthcare as a first or second-ranked factor in their migration decisions, whereas 61.1% of respondents were similarly motivated by the departure of family members as a first- or second-ranked factor.

Overall, the main conjoint results show that Micronesians' migration decisions are principally influenced by factors related to family ties and their healthcare needs. Factors related to their material well-being, such as income and jobs, also play a role in their migration decisions, although this role is clearly secondary. Finally, we find that climate risks themselves play a very limited, minimal role in Micronesians' desire to migrate, despite their acute exposure. While respondents are more likely to indicate a desire to migrate in scenarios with more extreme weather events, climate-related concerns do not centrally drive their decisions.

We also find that the limited impact of the climate attribute in the conjoint does not vary with respondents who we randomly exposed to the informational primer reporting accurate information about the immediate risk posed to FSM by environmental disasters and slow-onset degradation. Figure 7 shows ACIE for the five conjoint attributes based on the informational primer. There is no statistically significant evidence that exposure to the informational primer alters the influence of the different attributes on respondents' migration decisions.

Discussion

Micronesians are subject to exceptional circumstances. But the circumstances that make Micronesians exceptional are precisely those that one would, *a priori*, expect to produce a mass exodus to the United States—acute exposure to local environmental risks, relatively low standard of living, and *carte blanche* access to the richest country on Earth, where many of their relatives already reside. And indeed, our evidence shows that Chuukese citizens are generally aware of the threats posed by climate change and that those who face greater environmental risks are more likely to report plans to emigrate.

And yet, the majority of our sample of Micronesians has no plans to depart. Furthermore, our experimental results show that acute exposure to environmental risk plays a very limited direct role in prospective migrants' decisions. Other factors, like family ties in the recipient country and access to better healthcare and, to a lesser extent, access to jobs and better incomes, are each relatively stronger

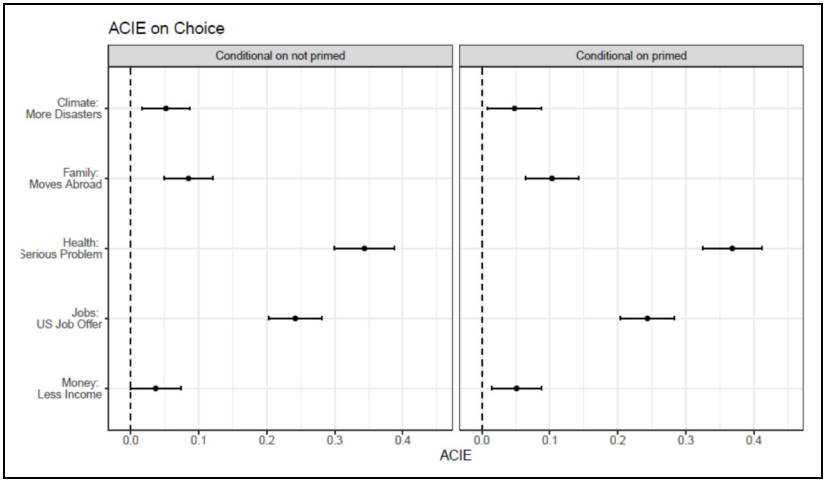


Figure 7. Average Component Interaction Effects for Informational Primer.

drivers of migration decisions among our Micronesian sample. If environmental hazards—from physical or informational exposure—do not move Micronesians to emigrate, who would they move?

Our findings align with recent research in the Pacific region (Burson et al. 2024), including numerous case studies conducted by Pacific researchers, who find that despite strong pressures from climate change, people prioritize strong cultural ties to ancestral lands and express concerns about the stress and cost associated with moving and living abroad. At the same time, the limited direct impact of climate risk on migration decisions is consistent with a discounting of potential and future (even catastrophic) risks, and people's prioritization of immediate challenges, such as those related to health, income, and employment. In particular, Gifford (2011) found that psychological barriers associated with potential events help explain inaction in the face of climate risk, even for those aware of their seriousness (see also, Everuss et al. 2017).

Our findings suggest that people and communities confronting slow-onset environmental hazards largely adapt in place. In Micronesia, this has meant moving or reinforcing buildings, planting subsistence crops elsewhere, or altering diets, and —among many—faith in God (see Gest et al. 2024). Equally importantly, the Micronesians who do wish to depart are driven by conventional push and pull factors found in other regions of the world without such facilitated mobility to another country. So, it is unclear that a hypothetical visa program that granted people confronting slow-onset environmental risk brought upon by climate change would produce any flows that conventional visa types don't already attract.

To be fair, these findings do not mean that environmental risks and climate change do not indirectly influence migration. In fact, environmental risks could conceivably influence other factors that directly drive migrant decisions. Climate hazards may cause

cascading effects on social, ecological, and economic systems, affecting, for example, food security (Challinor et al. 2018; Lawrence, Blackett, and Cradock-Henry 2020). Other studies point to a mix of factors that explain both mobility and immobility and recognize that mobility decisions involving climate change are embedded in an intersecting network of social, economic, cultural, and political factors (Boas et al. 2019; Tschakert and Neef 2022). This distinction between the direct and indirect influence of climate risks on migration decisions, however, is important in confronting the challenges posed by climate change. In particular, our findings suggest that immigration policies aimed at preemptively addressing climate risks before they materialize catastrophically in displacement are likely to be of limited effectiveness. In the most literal sense, climate mobility appears to principally be a response to catastrophic disasters. Absent such an extreme event, people exposed to the slow creep of environmental degradation are mobilized by traditional push and pull factors. And counterintuitively, this is the most conventional form of "climate mobility" today.

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Appendix A: Sample Characteristics

The following table compares characteristics of our sample of Chuukese and the FSM population. Unless otherwise noted, all figures come from the CIA World Factbook.

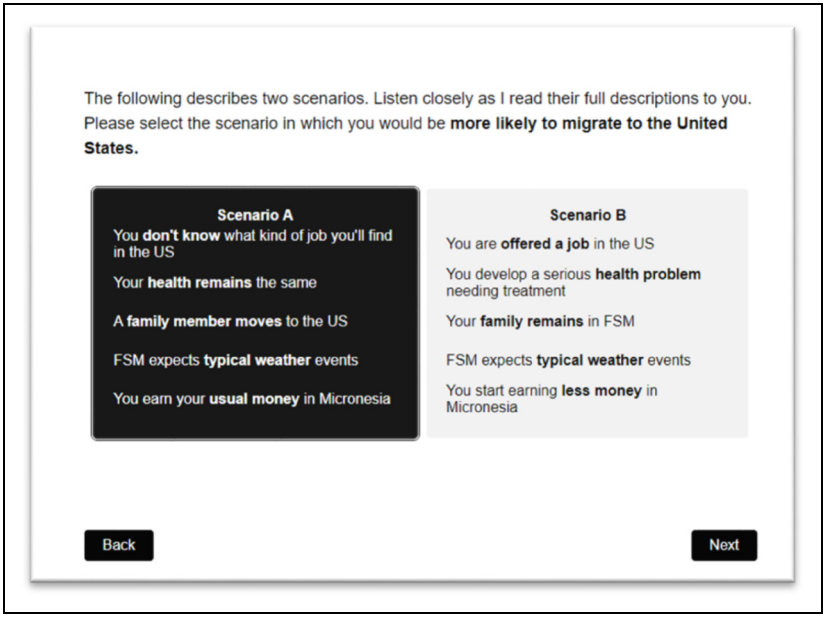
Appendix Table 1. Comparison of Sample and Population Characteristics.

Variable	Chuukese sample	FSM population
Sex ratio (males per female) 15–64 years old	0.94	0.90
Total fertility rate (children per woman)	2.22	2.18
Unemployment rate	16.2% (2010 est)	20.6%
Average adult age (over 15)	35.2[7]	32.16
Median adult age (over 15)	32.4[8]	31
Education: Complete Secondary	43.7%[9]	52.4%
Religion: Catholic	54.7%	65.6%
Religion: Protestant	41.1%	32%

Appendix B: Conjoint Presentation Example, and Informational Primer

Appendix Figure 1 shows an example of the forced-choice conjoint presentation that our respondents were exposed two. As mentioned in the manuscript, each respondent was exposed to a total of 5 conjoint presentations, in which the attribute values was randomly assigned and in which the order of the attributes was also randomly assigned (to avoid order effects). In the specific example in Appendix Figure 1, Scenario A and Scenario B differ in every single one of the attributes, but in most instances that respondents experience at least one of the attributes had the same value in both scenarios.

Appendix Figure 2 displays the informational primer that some of our participants were exposed to. This informational primer was designed to look like a news item and it uses factual information derived from a World Bank report. Half of our respondents were randomly assigned to receive this primer information, while the other hand of respondents was not exposed/primer by any additional information provided by the researchers. The informational primer was displayed (for those assigned to receive it) prior to the conjoint experiment (with a number of unrelated demographic questions in between the two).



Appendix Figure 1. Example of Conjoint Forced Choice.



Appendix Figure 2. Informational Primer.