

Deflection and Delay, Not Deterrence: Visa Restrictions and Irregular Migration to the United States*

Jordi Amaral, George Washington University

David Leblang, University of Virginia, leblang@virginia.edu (corresponding author)

Sophia Marcus, Millennium Challenge Corporation

June, 2026

Abstract: Governments increasingly seek to control migration not only at their own borders but also upstream, encouraging transit countries to restrict the movement of would-be migrants. Whether this strategy works remains contested. We examine one of its most common yet least visible instruments—short-term tourist visa requirements imposed by countries across the Americas—and ask how they shape irregular migration to the United States. We argue that once the decision to migrate has been made, visa restrictions raise the cost of specific routes without altering the underlying decision to move, prompting migrants to reroute rather than remain in place. We analyze novel monthly data on irregular migrant encounters in three Western Hemisphere corridors—the Panamanian Darién Gap, the US southwest border, and the US Caribbean sector—from December 2019 through December 2023. Using a panel hurdle model that distinguishes between whether migrants from a given origin appear on a route and how many appear, we find little evidence that visa restrictions deter migration overall. Restrictions instead produce *spatial deflection* across routes and *temporal deflection*, with effects that fade within roughly nine to fifteen months as migrants exploit alternative paths. These findings qualify the promise of border externalization: visa controls redistribute and delay irregular migration more than they reduce it.

Word count: 11,448

Introduction

Migration is among the most politically charged issues in contemporary democracies. It commands attention regardless of whether migrants are “pushed” or “pulled,” or whether they are unaccompanied children, single adults, or family groups. Politicians routinely invoke migration to energize their base, attract supporters, and sharpen contrasts with opponents, especially regarding immigration’s material, economic, and cultural aspects (Scheve and Slaughter 2001; Sides and Citrin 2007; Hainmueller and Hiscox 2010). Recently, the slogan of “open borders” has also been used to frame irregular or

* Authors are listed in alphabetical order. We are indebted to a previous co-author, LS, for their work on the empirical analysis and methodology. We are grateful to seminar participants at the University of Houston and Rice University for helpful comments, as well as to Utah State University’s Center for Growth and Opportunity for feedback. Financial support from the University of Virginia’s Humanitarian Collaborative, as well as a grant from the University’s Strategic Investment Fund, is gratefully acknowledged.

unauthorized migration as a national security concern (Cordero, Zagórski, and Rama 2024; Savatic, et al., 2024).

Scholarly literature often concentrates on legal immigration—that is, immigration through official entry points—primarily driven by a desire to increase wages and political opportunities (Fitzgerald, Leblang, and Teets 2014). A growing number, however, cross borders without authorization, sometimes to claim asylum—a rising trend across the Global North. For example, in 2023, 875,000 migrants entered the United States through legal channels, while nearly one million individuals claimed asylum at ports of entry, and over two million were apprehended attempting to enter the US between ports along the southwest border.

Although some see the border as a vital part of a country's independence and identity (Herz 1957; Baud and Schendel 1997), borders are difficult, if not impossible, to fully close and control. Traditional ways of using economic power, such as foreign aid and trade, can sometimes lead to increased migration (e.g., Clemens and Postel 2018; Bermeo and Leblang 2015). Attempts to cut down on immigration by building barriers or deporting people as a deterrent have also shown to be ineffective (Avdan, Rosenberg, and Gelpi 2023; Schon and Leblang 2021). The limited success of both domestic and international policies in managing migration pressures has led countries to change what Simmons and Kenwick (2022) call their “border orientation,” meaning expanding the limits of destination countries’ administrative and territorial borders to include migrant-origin or transit countries (Jaulin et al. 2020).

This outward border extension has an inward counterpart: the border is no longer a static line at the territory's edge but a fluid tool that projects outward into origin and transit countries and inward through interior enforcement and status checks (Shachar 2020). Visa restrictions represent one outward aspect of this flexible border. Our focus on them does not imply that the inward face is less important; rather, it acknowledges that both sides operate through distinct mechanisms and deserve separate consideration.

This externalization of borders can take many forms, ranging from increasing enforcement capacity in transit countries to providing payments to countries that host migrants, thereby preventing their further movement. Visa requirements often serve as a discreet, cost-effective means of externalizing borders. Issuing visas at consular offices abroad—meaning offshoring the border to the traveler’s home country rather than at the destination country’s borders—is a visible yet potentially innocuous way to manage migration (Zolberg 1997). Compared to traditional border control measures like turnaways or deportations, visa restrictions are less visible yet demonstrably effective (Czaika and Hass 2017; Cope and Leblang 2023). Visa requirements allow the country imposing them to pre-screen individuals before they reach the border (Czaika and Neumayer 2017; J. Torpey 1998).

While scholarly attention has examined border externalization strategies used by Australia and the European Union—where origin and transit countries are engaged as partners to prevent unwanted migration (e.g., FitzGerald 2019; Gammeltoft-Hansen and Tan 2018; Mesnard et al. 2024)—less is known about these dynamics in the Western Hemisphere. Research on European externalization explains how states use tools such as visa liberalization or development aid to encourage third-party countries to strengthen border controls (Laube 2021; Jaulin et al. 2020; Pacciardi and Berndtsson 2022). Historically, the Western Hemisphere has been viewed differently, with the United States mainly emphasizing a model of internal enforcement and unilateral border security rather than multilateral externalization agreements (Menjívar 2014). Recently, though, countries in the Western Hemisphere have increasingly adjusted their visa policies to limit entry and migration across the Americas (Amaral 2023).

Is this change in border orientation effective, especially after the end of COVID-19-related travel restrictions? We argue that it is not. Scholarly consensus indicates that migration is often a last resort, prompted by severe pressures such as violence, climate change, natural disasters, and economic hardship (Ambrosius and Leblang 2020; Bermeo and Leblang 2015). Despite these pressures, the 'rootedness hypothesis' holds that most people prefer to stay in their home communities, connected by strong social and cultural ties (Debray, Ruysen, and Schewel 2023). Therefore, once the decision to migrate is made—when the costs of staying exceed the risks of moving—migrants are unlikely to be deterred by bureaucratic hurdles. This raises the question, does externalizing immigration control actually deter migration?

We focus on irregular migration to the United States and across the Western Hemisphere, using novel data from December 2019 through December 2023. This allows us to observe shifts in migration patterns, from a period of stagnation caused by the COVID-19 pandemic to increased movement as migration restrictions gradually eased. Notably, northbound migration through the Western Hemisphere after 2020 became more diverse than in earlier periods, with a significant rise in movement through the Darién Gap (see Figure 1). We analyze the impact of externalization on both the *spatial* (geographic) and *temporal* patterns of migrant movement—unlike earlier research.

Our findings challenge traditional theories of territorial control: once emigration from a home country has begun, externalization strategies are only marginally effective. Changing border orientations may delay migration (*temporal deflection*) or alter the geography and routes of migration (*spatial deflection*), but in the long term, they do not prevent overall migration.

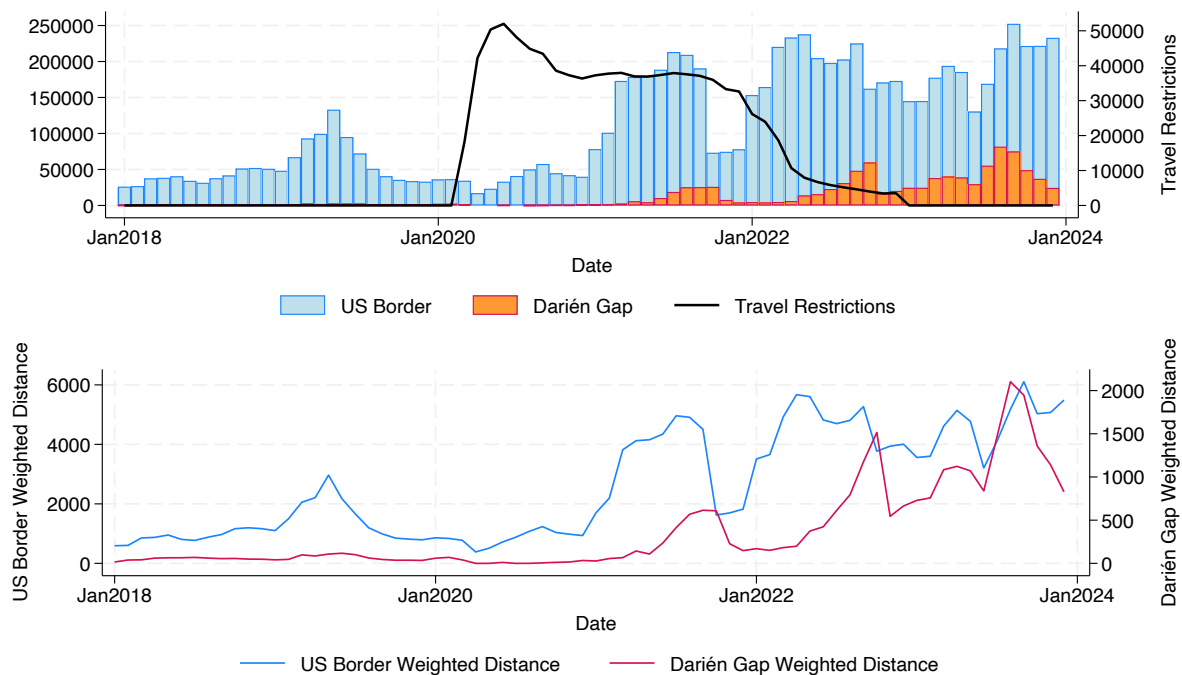


Figure 1. Irregular-migrant encounters and travel-visa restrictiveness in the Western Hemisphere, 2018–2023. Top: monthly encounters at the US southwest border and the Darién Gap with global visa restrictiveness overlaid (right axis). Bottom: encounter-weighted mean origin-to-US and origin-to-Darién distance. Sources: US Customs and Border Protection (DHS); UNICEF; Passport Index. Estimation sample December 2019–December 2023.

In the next section, we situate our argument within the existing literature on migration, borders, and externalization. Following this, we use illustrative vignettes to describe how border externalization occurs in practice in the Western Hemisphere. In Section 3, we propose a theory on the relationship between externalization and migrant encounters, based on the strategic calculations of aspiring migrants: considering how migrants weigh the costs of remaining in their home countries versus undertaking migration, we argue that visa restrictions imposed in transit countries tend to deflect and delay, rather than deter, potential migrants. To test our hypotheses, Section 4 introduces our novel data sources on monthly irregular migrant encounters at three key migration corridors in the Western Hemisphere: the US southwest border, the US Caribbean sector, and the Panamanian Darién Gap. Section 4 also outlines the quantitative methodology used to evaluate our hypotheses. The following section presents our empirical results, while Section 6 concludes by discussing the policy implications of this research, considering the limitations of externalized migration policies and the emerging context of the second Trump administration.

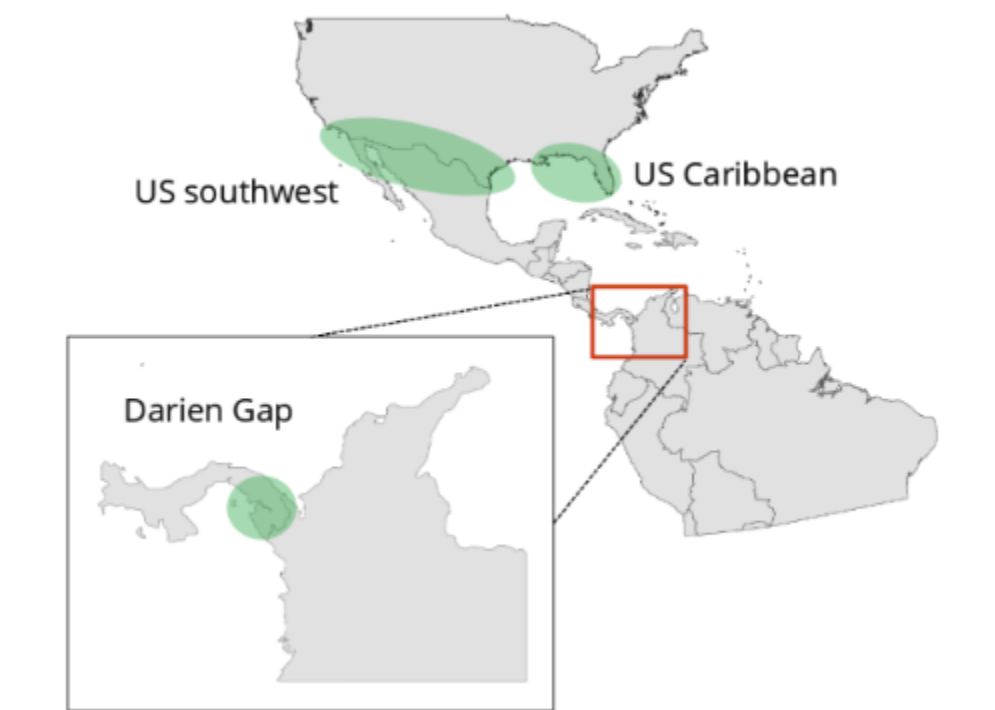


Figure 2. Study areas. The two destination entry points into the United States (the southwest land border and the Caribbean maritime sector) and the Darién Gap transit corridor.

1. Migration, Borders, and Externalization

Immigration shocks or unexpected increases in immigration boost support for radical right political parties, expand the messaging of populist and nativist politicians, and threaten incumbents (Bernhard and Leblang 2016; Campani 2018; Dennison and Geddes 2019; Peters 2017). To reduce the chances that immigration shocks will cause negative political effects, policymakers in Western democracies have employed various policy tools to lessen their impact (Adamson and Greenhill 2023). Internally, countries have raised residency requirements, implemented language tests, and increased educational standards as barriers to legal migration (e.g., Helbling and Leblang 2019). Similarly, destination countries have developed and implemented a wide array of policies to address irregular migration.

These include constructing and strengthening border walls and fences (Avdan, Rosenberg, and Gelpi 2023; Linebarger and Braithwaite 2020; Schon and Leblang 2021), using foreign economic aid (Bermeo and Leblang 2015; Clemens and Postel 2018), and relying on deportations to deter arrivals (Ambrosius and Leblang 2020), all serving as formal migration tools used by a wide range of leaders and nations.

The limited effectiveness of these traditional methods of statecraft—such as development aid and border fortifications—in reducing or deterring unwanted migration has led policymakers to develop strategies that extend their sovereign borders outward. Australia and members of the European Union (EU), for example, seek to involve both origin and transit countries as partners in efforts to prevent unwanted migration (Mesnard et al. 2024; Pacciardi and Berndtsson 2022; Gammeltoft-Hansen and Tan 2018; FitzGerald 2019; Laube 2021; Jaulin et al. 2020). This approach of externalization increased during the 2015 Syrian refugee crisis, partly driven by EU countries’ obligations under both UN and EU laws governing the processing of asylum seekers. The principles in the 1951 Refugee Convention and the 1967 Protocol require countries to evaluate whether individuals have a well-founded fear of persecution or other serious harm if returned to their home country. Preventing those seeking asylum from reaching national borders—at least in theory—relieved destination countries of the legal obligation to assess their asylum claims.

The Syrian case is one example of a trend noticeable over the past twenty years, as the EU has increasingly used the “carrot” of visa liberalization—visa-free travel—to encourage third-party countries to strengthen their border controls. However, these efforts have not always succeeded, as transit countries have their own priorities and define the dynamics of externalization on their own terms. In 2018, for instance, the EU offered 30 million euros and a liberalized readmission agreement to Morocco in exchange for increased coastal surveillance to prevent irregular migrants from arriving in Spain. Morocco, seeking visa-free entry for its citizens into the EU, declined, and the agreement fell through (Carrera et al. 2018; Laube 2019). This represents what Tsourapas (2019) calls “refugee rentier states,” where states effectively use blackmail to extract concessions from the EU.

Overall, European externalization efforts have yielded mixed results, per Mesnard et al. (2024). The authors find that externalization policies like the 2016 EU-Turkey deal aimed at preventing Syrian migration have blocked asylum seekers’ movements but have not stopped other irregular migrants; instead, they have shifted these migrants to different routes. Similarly, Czaika and Hobolth (2016) discovered that migrants tend to reroute in response to deterrence measures, with European countries’ refusals of short-stay visa requests leading to increased irregular entries.

Externalization efforts have historically been relatively rare in the Western Hemisphere. This changed significantly in 2017, when the first Trump Administration introduced the Migrant Protection Protocols, commonly known as “Remain in Mexico,” which required asylum seekers to remain in Mexico while their applications were processed. The Administration then pursued similar agreements with Guatemala, El Salvador, and other countries that were either origin or transit countries for those seeking to enter US territory, known as “Safe Third Country Agreements.” These bilateral efforts likely would have continued, but the declaration of Title 42 amid COVID-19 in March 2020 effectively shut down the US border for many nationalities, rendering such bilateral agreements irrelevant.

The easing of strict COVID-19 travel restrictions worldwide, combined with pent-up emigration demand and ongoing (and emerging) economic, environmental, and violent crises in various countries, led to a surge in migration to the US starting in 2021 (see Figure 1, which uses our data to give an overview of encounters at the US southwest border and in the Darién Gap). Interestingly, 2021 also marked a turning point for migrant diversity, as arrivals at the US southwest border increasingly began

their journeys in South America, the Caribbean, and even Africa and Asia—people seeking the US as a destination started traveling longer distances on average, using South America as an entry point into the Western Hemisphere.

As US-bound migration increased in the early 2020s, the newly inaugurated Biden Administration intensified efforts to externalize borders—but with a twist. Instead of simply urging countries to restrict migrant movement in transit, the US began advising other nations in the region to adjust their visa policies regarding migrant-sending countries. These visa restrictions add both time and costs, including financial and logistical expenses, for migration (Czaika and Neumayer 2017). Additionally, visas are often used to prevent the entry of individuals the destination country wants to exclude, creating another layer of obstacles for potential migrants (Mau et al. 2012; J. C. Torpey 2000). This serves as a quintessential case of externalizing borders, as screening happens even through non-state actors outside the destination country’s territory: countries typically require airlines, buses, and passenger ships to refuse boarding to individuals without a valid visa if necessary. The next section examines examples of how visa restrictions have been used as part of border externalization in the Americas.

2. Externalization and Visa Restrictions in the Americas in Practice

The spread of visa restrictions across the Americas under the Biden administration significantly hindered hemispheric travel. Take Venezuela, for example, which has experienced one of the globe’s largest exoduses in recent years. A decade ago, Venezuelans could fly visa-free to nine out of ten countries along the route to the United States, with El Salvador being the only exception. Visa restrictions were later imposed by Nicaragua (2016), Panama (2017), and Guatemala (2018), but these did not impact the short visa-free flight path from Venezuela to Mexico en route to the US. However, in early 2022, the remaining Central American countries and Mexico implemented visa restrictions for Venezuelans—starting with Mexico in January, followed quickly by Belize, Costa Rica, and Honduras in the same month—aimed at reducing irregular crossings at the US border. As a result, the US border for Venezuelans had been extended as far south as Panama’s Darién Gap.

But what evidence exists to show where and why governments externalize migration policy, and how changes in visa policy influence this externalization framework? Theoretical and empirical scholarship suggests that smaller states are not “powerless pawns”; rather, they have agency and can push back against larger neighbors, especially in controlling human mobility (Greenhill 2016; Buehler, Fabbe, and Eleni 2022). In this section, we examine the US’s successes and failures in externalization.

In recent years, partner states across the Americas have frequently introduced barriers to migration through visa policy restrictions, in several prominent and well-documented cases at the encouragement of the United States (Ulmer, Graham, and Spetalnick 2021). Alongside measures aimed at reducing the number of Venezuelans arriving via Mexico; Haiti, Nicaragua, and Cuba have also recently faced visa restrictions designed to deter flights and easy migration routes (see Amaral 2023). These changes have significantly affected migration paths and changed how migrants move through the Americas toward the US southwest border. For example, the US has encouraged both Mexico and Nicaragua to impose stricter visa restrictions on migrants from various countries encountered at the US southwest border. However, while Mexico has helped enforce visa restrictions to halt or redirect migration, Nicaragua has taken a different approach by rejecting visa restrictions and becoming a gateway to Central America.

Mexico

Due to Mexico's geographic proximity to the US, the power asymmetry between the two, and their interconnected economic relationship, Mexico has long acquiesced to US requests to externalize its border. Both countries work together on border security, but this cooperation took a new form under the Biden administration through the coordinated use of visa restrictions to stop migration. During 2019-2023, the period analyzed in this study, the enforcement of visa restrictions against Venezuelan nationals illustrates this coordination.

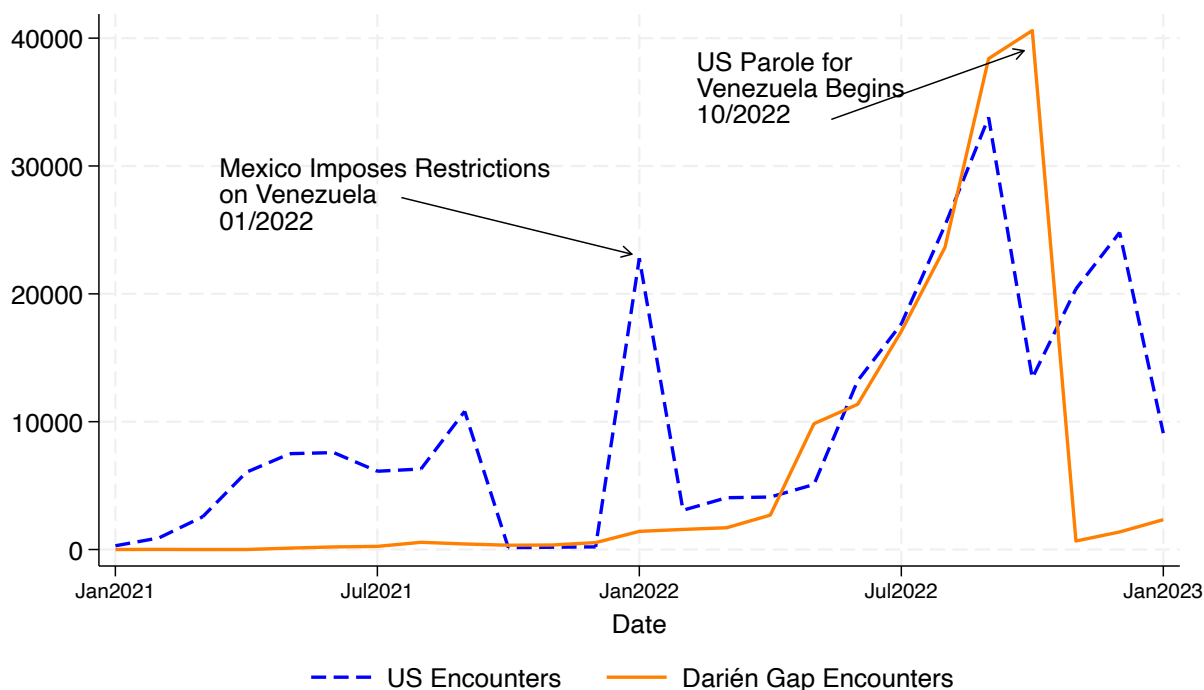


Figure 3. Venezuelan irregular-migrant encounters by corridor around Mexico's January 2022 visa requirement. Sources: CBP (US southwest border); UNICEF (Darién Gap); Passport Index.

Mexico's imposition of a visa requirement on Venezuelans in January 2022 (see Figure 3) followed a reported United States request (Ulmer, Graham, and Spetalnick 2021), and while no single (public) document records the full bargain, the Biden administration adopted a better balance of incentives and pressure compared to the previous administration's more aggressive efforts to influence migration policies through threats of tariffs. Despite initial antagonism from Mexican president Andrés Manuel López Obrador toward Joe Biden when he took office—some perceived López Obrador as more sympathetic to Donald Trump's strongman persona—López Obrador and Biden maintained a mostly positive and cooperative relationship. This was evident in the return of the High-Level Economic Dialogue (HLED) mechanism and the new US-Mexico Bicentennial Framework for Security, Public Health, and Safe Communities (Wood and Helfgott 2022; Sheridan and Sieff 2023). The Biden administration also backed Mexico's efforts to address the root causes of migration in southern Mexico and Northern Central America through the *Sembrando Oportunidades* initiative and cooperation with Mexico's development agency, AMEXCID (Wood and Helfgott 2022). Moreover, Biden avoided harsh criticism or attacks on López Obrador over militarization or the dismantling of institutions, which some argued were directly linked to migration cooperation (Taladrid 2024; Sheridan and Sieff 2023; Denise 2024).

As a result of this engaged, non-punitive diplomacy and strong cooperation, the Biden administration expanded its influence over Mexico’s migration policy. The implementation of visa restrictions for Venezuela in January 2022 illustrates this, although the impacts—as empirically assessed in the results section—may not have been as effective as hoped.

Nicaragua

Compared to Mexico and other countries in the hemisphere, Nicaragua has rejected US efforts to externalize borders, using a strategy some analysts call “weaponizing migration” as a foreign policy tool ([Orozco 2024a](#)). The Central American nation has turned down US requests to curb irregular migration and impose visa restrictions on various nationalities that often cross at the US-Mexico border. Instead, Nicaragua has shown how small states can leverage migration ([Greenhill 2016](#)), allowing migrants from around the world to move freely and even removing visa restrictions for Cuba and Haiti.

Compared to the carrot-heavy approach with Mexico, the Biden administration chose to use the stick with Nicaragua to pressure the country into cooperating on border externalization. In November 2021, the Biden administration announced sanctions against the Nicaraguan government and banned its officials from entering the United States. The following month, as retaliation, Nicaragua dropped a long-standing requirement that Cuban nationals need a visa to enter the country. Figure 4 shows the impact of this policy change on Cuban encounters at the US southwest border.

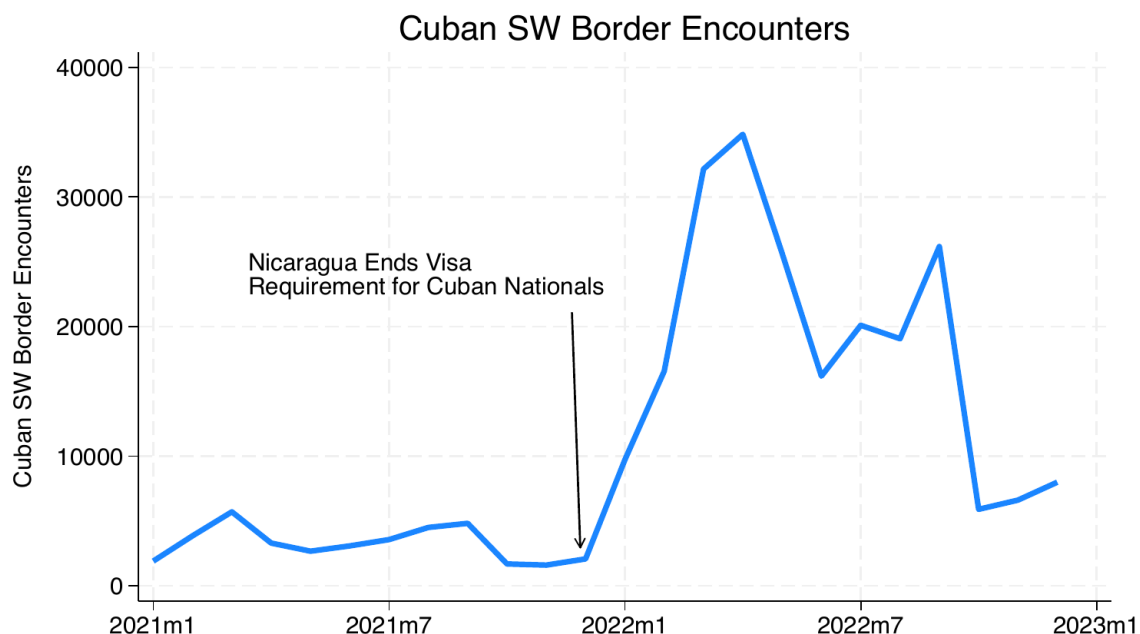


Figure 4. Cuban irregular-migrant encounters at the US southwest border around Nicaragua's December 2021 removal of its visa requirement for Cubans. Sources: CBP; Passport Index.

The US responded to Nicaragua’s easing of visa rules with additional sanctions as a coercive measure, but they proved ineffective. These sanctions target airlines, travel companies, and other individuals involved in coordinating charter flights that land in Nicaragua with migrants on board (see, for example, United States Department of State [2024c](#), [2024b](#); United States Department of the Treasury [2024](#)). Still, these efforts have not prevented Nicaragua from serving as a gateway for transit migration:

the Inter-American Dialogue counted, for example, 1,145 charter flights carrying at least 150 passengers each to Managua from Port-au-Prince, Havana, Curaçao, Caracas, Casablanca, and Zanderij, all headed toward the Mexico-US border between July 2023 and January 2024 ([Orozco 2024b](#), [2024c](#)).

Other Regional Examples

Although most countries in the hemisphere are more willing to support US efforts to externalize borders than Nicaragua, negotiations and calls to expand visa restrictions have taken time with many partner countries in the region. Ecuador, for example, saw a sharp rise in arrivals of Chinese migrants starting in 2023, many fleeing political repression and a slowing economy at home (Guerra 2024). However, only in June 2024 did Ecuador finally move to suspend its mutual visa waiver with China, likely delayed by the development and signing of a free trade agreement (FTA) with China in May 2023, which officially took effect on May 1, 2024. Once the FTA was in force, Ecuador gained more flexibility to heed US pressure, especially as US aid increased in 2024 to address security concerns, and as Ecuador has pushed for its own Ecuador-US FTA and Temporary Protected Status for Ecuadorian nationals in the US with irregular migratory status (United States Department of State 2024a; Primicias 2024).

In Central America, beyond visa restrictions, Panama and Costa Rica have shown willingness to cooperate on border externalization, which includes US-funded deportation flights of migrants crossing the Darién Gap. Panama agreed to a deal in July 2024, with Costa Rica subsequently mulling over the proposition and potential details of its own agreement with the US ([EFE Noticias 2024](#); [Coriat 2024](#)).

Visa restrictions are not the sole instrument of border externalization, but they became a key part of the US migration management toolkit under the Biden administration during the post-COVID shift in mobility patterns. In the next section, we theorize how visa restrictions might influence migration trends, both through deterrence and through geographic and temporal shifts.

3. Deterrence or Deflection? How Externalization Recalibrates Migration Costs

The trends in Figure 1 show a rapid increase in demand at the southwest border of the United States despite externalization and growing bilateral efforts to restrict mobility through visa restrictions. This limitation of state capacity—an inability to prevent the arrival of migrants—suggests that migrants do not see state restrictive measures as deterrents but rather as obstacles to be avoided. In this section, we present a theory to explain the limits of state efforts to externalize their migration policy.

Compared to staying in place, migration is a costly choice for individuals and families. For most people, the expense of moving keeps them from even considering a potentially dangerous journey, especially given the strength of local social and cultural ties ([Debray, Ruysen, and Schewel 2023](#)). Therefore, for most individuals, migration remains a last resort, particularly when it involves crossing rough terrain or multiple countries, and when it occurs outside official legal channels.

Does extending the border through visa policies effectively increase migration costs and thus reduce unwanted irregular migration? If these measures achieve their goals, more restrictive immigration policies in transit regions downstream of destination countries could lower the number of irregular migrants crossing borders. Destination countries, such as the United States, might pressure neighboring countries, like Mexico, to limit access—for example, by imposing stricter visa requirements for certain nationalities. Making regional access more restrictive for migrants from their country of origin by

having transit countries adopt tighter immigration policies should reduce the overall number of migrant encounters at destinations. We summarize this regional migrant deterrence hypothesis as:

H1a Regional Deterrence: Increased migration restrictions on individuals from country i in downstream transit countries will decrease encounters with migrants from country i in the upstream destination entry point. In other words, if Mexico enacts visa restrictions on Venezuelans, fewer Venezuelans should arrive on the US southwest border.

Due to variations in enforcement and capacity among downstream transit countries (e.g., Mexico and Panama) to implement stricter measures, the effectiveness of restrictions may vary regionally. However, if external restrictions effectively deter irregular migrants, then increased restrictions across all downstream transit regions leading to the destination country should decrease encounters with irregular migrants there. We summarize this overall migrant deterrence hypothesis as:

H1b Aggregate Deterrence: The cumulative effect of more restrictive externalized migration policies across all downstream transit regions will reduce overall arrivals at a destination country. In other words, if visa access tightens in the aggregate across Mexico, Central America, the Caribbean, and South America, total encounters at the US southwest border should fall.

These deterrence hypotheses implicitly assume that migrants will either choose not to leave their home country or, after observing these restrictions, will stop or return home. This view, however, underestimates migrant agency. If people who have already made the significant decision to leave their home observe restrictions that limit their access to a region, they may simply adjust their plans to avoid such obstacles. We expect that externalization policy efforts will therefore be less effective at stopping or significantly reducing irregular immigration into destination countries.

Our argument rests on a distinction between two related decisions. The first is the decision to leave the origin; the second is the decision of how to route once the journey is underway. Our theory concerns the second, the population that has already committed to migrating, for whom a visa requirement in a transit country raises the cost of a particular path without altering the underlying decision to move. The strength of deflection should therefore vary with a migrant's room to substitute across routes. Overland intra-American migrants, who can shift between land corridors at relatively low cost, should reroute readily; migrants traveling from outside the hemisphere, who depend on air access and for whom a visa denies boarding, face higher substitution costs and should deflect less completely. The motivations for migration may also moderate the calculus surrounding route substitution. However, our encounter data does not record individual motive, so we are unable to examine such mechanisms here. Moreover, most migrants—including those pertaining to our study period—partake in mixed migration motivated by multiple, at times competing, factors. Crucially, as discussed in the following section, we include controls in our models for common “push” and “pull” factors for migration.

When routes are restricted or otherwise closed—such as when a transit country limits access following US externalization efforts—migrants will seek alternative routes or entry methods instead of abandoning their entire migration plan. For example, in the context of limited access into Mexico, this causes migrants to switch from entering Mexico by air or sea to traveling overland, likely through Central America (starting with the Darién Gap). It follows that externalized migration restrictions deter effectively only when broadly applied across multiple downstream transit regions, which is unlikely given geopolitical realities, as highlighted by the Nicaraguan case above. Considering these expected

rerouting behaviors among migrants who have already committed to costly migration, we propose the following Spatial Deflection hypothesis:

H2 Spatial Deflection: Externalization restrictions that limit migrant access to a transit region will spatially deflect migrants to use other, nearby regions for transit.

In the context of south-to-north migration in the Western Hemisphere, these rerouting behaviors indicate different responses to externalization restrictions depending on a region's geography relative to the United States. Table 1 summarizes our hypothesized relationships between externalization restrictions imposed in four potential transit regions on the number of encounters across two destination corridors (the US southwest border and Caribbean sector) and one transit corridor, the Darién Gap. Critically, in a world where migrants do not exercise routing agency, the effect of any restrictive migration policy would always be negative overall.

Table 1. Hypothesized effects.

Travel visa restriction in:	US southwest	US Caribbean	Darién Gap
Mexico	–	+	+
Central America	+	–	+
Caribbean	+	–	+
South America	–	+	–

Note: Anticipated effect of visa travel restrictions in regions denoted by rows on irregular migrant encounters at crossings denoted by columns.

Taking Mexico's visa restrictions as an example, Table 1 summarizes our Spatial Deflection Hypothesis. Our theory suggests that if Mexico requires visas for entry, these restrictions would lead to fewer encounters at the US southwest border. However, this does not mean that migrants will stop moving north: restrictive visa policies in Mexico should cause more migrant encounters in the US Caribbean sector as migrants seek alternative routes around these restrictions, and also result in increased encounters in the Darién Gap as migrants turn to southern entry points on their way to Mexico and the US southwest by land. Similarly, visa restrictions in Central America would incentivize migrants to reach the US southwest by land via the Darién Gap, while dangerous maritime voyages in the US Caribbean sector may be deemed unnecessarily risky given this available overland option. In summary, while migration restrictions may reduce encounters on one route, they are likely to increase encounters on another as migrants adapt their routes in response to new conditions along their journey to their destination.

The route adjustment process further shows that restrictive externalization policies do not completely stop irregular migrants. Instead, they, along with this spatial deflection, tend to delay their arrival by encouraging rerouting onto different, less expedient migration paths. Therefore, for each of these effects, we hypothesize that the effectiveness of restrictions will decrease over time as migrants discover new routes to bypass them. Over the long term, the total level of migration remains roughly the same as before. This pattern of migrant rerouting in response to restrictive externalization policies leads to the following Temporal Deflection hypothesis:

H3 Temporal Deflection: Externalization restrictions will reduce encounters with irregular migrants after the restrictions, but their effectiveness will decline over time as migrants reroute to other regions to reach their intended destination.

Returning to the hypothesized responses to immigration restrictions in the transit regions identified in Table 1, this temporal deflection process becomes especially clear for the route through the Darién Gap. As transit regions north of the Darién restrict access to migrants, our Spatial Deflection hypothesis suggests that encounters in the Darién Gap will increase as migrants adapt by rerouting. This rerouting takes time because migrants respond to upstream policy changes, which, all else being equal, will initially decrease migrant encounters—an effect that will attenuate over time. For example, if Mexico restricts visa access, migrants reroute through the Darién. This should cause an immediate drop in encounters at the US southwest border. However, these migrants still aim for the US, just via this more southern route, and will arrive later than they would have without migration restrictions. This rerouting causes a delay in irregular encounters as migrants adjust to policy barriers and illustrates Temporal Deflection—that the effects described in Table 1 will decrease over time as encounters stabilize following external migration policy changes.

This hypothesized link between migrant encounters and rerouting, as illustrated by this Darién Gap example and arrivals at the US southwest border, suggests an additional element in the relationship between externalized immigration restrictions and irregular migrant encounters at destinations: the viability of alternative routes. In the context of irregular migration in the Western Hemisphere, the Darién Gap is a costly route of desperation that most migrants try to avoid. The region is mostly undeveloped, with difficult and dangerous terrain isolated from nearby settlements, and has a history of being used by non-state armed groups and criminal organizations that migrants might encounter when traveling through it. Due to these risks, the Darién Gap has historically been an infeasible migration route for aspiring migrants.

In addition to our hypothesis that externalization policies will have limited effectiveness due to Temporal Deflection, we also hypothesize that the overall success of these policies will depend on the viability of migration routes upstream of transit regions that implement such restrictions. Returning to the example of Mexico, the success of US externalization efforts to encourage the Mexican government to enforce stricter immigration controls for migrants from targeted origin countries will vary with the popularity of the Darién as an alternative entry point for migrants seeking to avoid new restrictions. Instead of risking detention upon arrival at airports or other secure entry points, migrants might consider using the Darién Gap to enter Mexico by land. As more migrants become aware of these alternative routes, the initial impact of restrictions on encounters at destinations will diminish—more migrants will reroute away from restricted areas and exploit these new paths. In such cases, the effectiveness of destination-country externalization efforts to reduce migrant encounters will depend on the viability of other migration routes. This leads to our final hypothesis on enforcement capacity:

H4 Enforcement Capacity: The effectiveness of externalization policies over time in reducing the number of irregular migrant encounters at a destination will depend on the volume of migrants passing through an area.

Taken together, these four hypotheses—Migrant Deterrence, Spatial Deflection, Temporal Deflection, and Enforcement Capacity—specify how the effectiveness of externalized visa restrictions should vary with the geography and timing of irregular migration. If externalization is effective, more restrictive policies in transit regions should deter migrants and reduce encounters at destinations. However, irregular migration remains a costly (and at times deadly) choice that most individuals and families prefer to avoid. The costs of staying in their home country often outweigh the perceived costs of migration, even when transit regions enforce restrictions. It is for these migrants—those who have already decided to bear the costs of irregular migration—that we most expect the hypothesized patterns of deflection and enforcement capacity to influence outcomes. In the following section, we describe the data sources and the empirical strategy we use to test these hypotheses.

4. Data and Methods

We assess the effectiveness of external migration policies in deterring or reducing irregular migration using a series of panel exponential hurdle models. These models analyze monthly encounters with irregular migrants at three key points: (1) the Darién Gap; (2) the US southwest border; and (3) the US Caribbean sector, specifically the Miami and New Orleans sectors. Our dataset covers migrant encounters at these locations across 157 countries over four years, from December 2019 to December 2023. By irregular migrant encounter, we mean migrants who cross or attempt to cross through a transit country (such as Panama) or enter the US illegally, either without proper documentation or via unauthorized points of entry.

Irregular Migration – We draw on two data sources on irregular migration to examine the similarities and differences in the factors driving migration through the Darién Gap and into the US via its southwest border or Caribbean sector. Darién Gap crossing reports are from UNICEF’s Office of Monitoring and Evaluation and show the total number of monthly encounters by migrant country of origin. In our sample, migrants encountered in the Darién originate from 97 countries across the Americas, Europe, Asia, and Africa.

To assess migration demand into the United States, we use encounter data from the US southwest border and Caribbean sector, provided by the Department of Homeland Security’s (DHS) Customs and Border Protection (CBP). These reports detail total monthly encounters, broken down by migrant country of origin. During our study period, CBP agents encountered migrants from 131 countries attempting to cross into the US along its southwest border and from 52 countries in the Caribbean sector. Two features of the encounter series warrant comment, since our argument reads encounters as a proxy for irregular arrivals. First, an encounter records an event rather than a distinct individual: under the Title 42 expulsion regime, a single migrant could be expelled and re-encountered within the same month, so recidivism inflates the number of encounters. This double-counting raises the level of the series, but it is common to all origins facing the same enforcement regime in a given month and is absorbed by the origin and month fixed effects that structure our models. Second, our claims concern the redistribution of encounters across corridors rather than their absolute level, and recidivism within a single corridor cannot generate the cross-corridor substitution—fewer encounters on one route, more on another—that constitutes spatial deflection. We further control for the Title 42 period and the CHNV parole program in the robustness checks reported below, and the deflection pattern is

unchanged. We therefore interpret the encounter series as a measure of the relative intensity of irregular migration across routes rather than as a census of distinct migrants.

Externalization Restrictions – We evaluate migration externalization policies using dyadic travel visa accessibility reports. Data on travel visa restrictions are sourced from the Passport Index Dataset, which monitors monthly changes in entry requirements for residents of all countries traveling internationally ([Passport Index 2023](#); [Ilyankou 2024](#)). The data provide monthly snapshots of passport travel power from 2019 through December 2023. Additionally, the data include entry requirements for foreign nationals entering a destination country, such as whether visa-free access is available, the number of visa-free days permitted, or whether residents of a foreign country are prohibited from entry.

To compare travel visa requirements across countries, we classify visa entry restrictions into four ordinal levels based on the restrictions for migrants from an origin country to a destination country: travel bans or COVID bans (3), travel with pre-authorization (2), streamlined options like visas on arrival (1), and visa-free travel (0). Higher values indicate more restrictive travel access, while lower values indicate easier travel access. These levels represent the legal difficulty migrants from a specific origin face in entering destination countries. Throughout, our measure refers to short-term tourist travel visas—the entry requirements that determine whether a national of one country may board a flight or cross a land border into another without prior authorization—rather than to work, study, or family-reunification visas, which operate through different administrative channels and are less relevant for irregular migrants in transit.

Our coding captures the formal legal requirement to obtain a visa, not the practical difficulty of obtaining one. A growing literature shows that the de-facto accessibility of visas—consular waiting times, application fees, documentary requirements, and in some cases the absence of any consulate at which to apply—varies substantially across origins and is not captured by formal policy codes (Recchi et al. 2021; Deutschmann et al. 2025). To the extent that these frictions raise the effective cost of legal travel for some nationalities beyond what the formal code records, our measure understates the true restrictiveness of access for those origins, thereby attenuating rather than inflating the estimated effects.

Since our outcome of interest involves migration routes through the Darién or into the US via the southwest border or the Caribbean, we compile these visa measures for each origin country reported in our data by averaging visa entry scores for each origin country-month in our panel across four transit regions: Mexico (MX), Central America (CA), the Caribbean (CR), and South America (SA). Therefore, for each country in our panel, these regional averages indicate the restrictiveness of legal access that a resident would have to countries within a given transit region compared to other regions. This enables us to examine how immigration access restrictions may deter (H1a, H1b) or redirect (H2) migrants to different regions and routes in pursuit of their destination. Because each regional measure averages the underlying ordinal codes across the destination countries within a transit region, it varies continuously rather than taking only the discrete values of the underlying scale, and we treat these averaged measures as cardinal. In a robustness check reported in the appendix, we re-estimate the model with each regional measure entered as a set of ordinal indicators rather than as a continuous regressor; the deflection sign pattern is unchanged across all four transit regions, and for the multi-country regional averages the estimated effect moves monotonically across ordinal levels, so our conclusions do not depend on treating the scale as cardinal. We emphasize that the resulting variable captures visa restrictiveness across the Americas as it actually evolved over our window; several of the most consequential changes are well-documented instances of externalization—Mexico’s January 2022 visa on Venezuelans, adopted after a reported United States request (Ulmer, Graham, and Spetalnick 2021; HRW 2022), and the Nicaragua–Cuba visa reversal that followed United States

sanctions (Section 2)—even though we do not assume that every coded change was US-driven, and our identification does not require this assumption.

Two features of this variation bear on identification. First, restrictions are imposed by nationality rather than across the board, so the regional measures vary by origin and over time. The Mexico measure changes for only three origins over our window (most consequentially for Venezuela in January 2022), while the Central American measure tightens for roughly thirty origins, including a batch of thirteen in September 2023. By contrast, the Caribbean and South American measures, which average across many destinations, move for nearly all origins. Second, the origins that experience discrete restrictions are precisely the highest-volume nationalities on each corridor: Venezuela accounts for the majority of Darién crossings and Cuba for the majority of Caribbean-sector encounters during our window. Statistical identification, therefore, draws on the corridors that carry the bulk of irregular migration rather than on marginal cases. Because the Mexico channel rests on so few origins, we corroborate it with an event study around the January 2022 Venezuela restriction (Figure A.2) rather than relying on the panel coefficient alone; the appendix also documents the timing of restriction changes across regions and origins (Figure A.5).

To determine whether migration restrictions cause delays in arrivals due to rerouting through a process called Temporal Deflection (H3), we use our visa restrictiveness measures to create an indicator of the number of months since an origin country’s access to a region became more limited. These origin-country-specific measures reflect how many months have passed since travel to a particular transit region (MX, CA, CR, or SA) became more restricted for residents of that country. This allows us to assess whether the effectiveness of migration restrictions diminishes over time as migrants develop new strategies to bypass those restrictions. Table 2 provides summary statistics for our main variables: encounters and externalized migration policies.

Table 2. Descriptive statistics -- main variables.

		Obs	Mean	SD	Min	Max
Encounters	US southwest	7644	570	3152	0	66584
	US Caribbean	7644	1.58	27.9	0	1179
	Darién Gap	7644	119	1583	0	62700
Travel visa (restriction)	Mexico	7644	1.56	0.818	0	2
	Central America	7644	1.18	0.776	0	2
	Caribbean	7644	0.91	0.484	0	1.77

		Obs	Mean	SD	Min	Max
	South America	7644	1.20	0.548	0	2
Travel visa (restriction duration)	Mexico	7644	24.79	14.21	0	49
	Central America	7644	24.45	14.32	0	49
	Caribbean	7644	7.87	11.32	0	49
	South America	7644	2.51	3.69	0	24

Note: Travel visa restriction durations report the time, in months, since migrants from an origin country in our data faced tighter travel restrictions. Observations are origin-country-months ($N = 7,644$); the panel spans 2019m12–2023m12 (49 months), so the maximum restriction-duration value (49) equals the number of months in the window. The four restriction measures are origin-country monthly averages of the underlying 0–3 ordinal scale (visa-free = 0; visa on arrival = 1; pre-authorization = 2; travel or COVID ban = 3) across the destinations in each transit region; in the estimation sample they range from 0 (visa-free) to approximately 2—exactly 2.0 for Mexico, Central America, and South America and 1.77 for the Caribbean—never reaching the per-destination maximum of 3, because no transit region has all of its destinations at a travel ban in the same month.

Control Variables – In addition to the regional passport travel values, we include several control variables to account for alternative explanations of variation in migration through the Darién and to the United States, including armed conflict, natural disasters, climate change-related extreme weather conditions (such as wet-bulb temperatures and extreme precipitation or drought), population dependency structure, policy changes related to COVID-19 lockdown restrictions, US economic conditions indicated by unemployment rates, and legal entry programs for specific countries. Additional discussion of the rationale for including these variables, their measurement, and data sources is provided in the Appendix.

Methodology – Our dependent variable is zero-bound and heavily skewed toward zero because most country-months in the panel have no citizens encountered at any of the three locations in our analysis. Among all the country-months in our data, 73.8% report no encounters at the Darién Gap, 67.6% report no encounters along the US southwest border, and 93.2% report no encounters in the US Caribbean sector. Therefore, two related processes are at play: whether any migrants from a country are present in a given month, and if so, the number of migrants. To address this, we use exponential hurdle models (Cragg 1971; Wooldridge 2010), which employ a selection equation to condition the count process.

We adopt the exponential hurdle because the two quantities it separates are substantively distinct in our setting: whether any migrant from a given origin appears on a corridor in a given month—the extensive margin, governed largely by whether a route from that origin is active at all—and how many

appear once it is, the intensive margin. A zero-inflated model, by contrast, treats some zeros as structural “always-zero” cases, which misrepresents origins that simply have no active corridor in a given month but could in another. We do not interpret the selection equation substantively; it conditions the count. The deflection results are robust to estimating each corridor by Poisson pseudo-maximum-likelihood (PPML): the central channels retain their signs and significance, and we report the full estimator comparison and fit statistics in the appendix (Table A8).

Specifically, the model uses an observed boundary value (0 reported migrants in a country month) to fit the following functional form: $\text{encounters}_{it} = s_{it}h_{it}^*$; where s_{it} represents a latent selection variable indicating whether the outcome is bound at 0:

$$s_{it} = \begin{cases} 1 & \text{if } z_{it}\gamma + \epsilon_{it} > 0 \\ 0 & \text{otherwise} \end{cases}$$

We model the selection process using a vector of predictors that past research—discussed in the appendix—indicates influence initial migration decisions, including armed conflict, climate change (wet bulb temperatures and drought), natural disasters, and economic indicators (population dependency and US unemployment). We also include region of origin (based on World Bank definitions) and post-COVID fixed effects in the selection equation to account for heterogeneity in the regions more likely to have migrants at the three locations represented in our data. The selection equation is modeled using a probit regression. Because every regressor in the selection equation also enters the count equation, identification of the conditional count rests on the model's functional form—the probit selection kernel against the exponential count mean—together with the differing fixed-effects structure across the two stages (region effects in selection; origin and month effects in the count equation). We report in the appendix that imposing a plausible selection-only exclusion restriction—an origin's geographic proximity to the overland route, or a structural indicator of whether its nationals are ever encountered on a corridor—leaves the visa coefficients essentially unchanged, so our conclusions do not depend on the absence of such a restriction.

The latent count process (h_{it}^*) is only observed when the selection variable (s_{it}) equals 1 and we model this process using an exponential functional form:

$$h_{it}^* = \exp(x_{it}\beta + v_{it})$$

We model the count process using the same predictors included in the selection equation, with the addition of our externalization visa measures, origin-country and month fixed effects (rather than regional fixed effects), as well as the total number of beneficiaries of a legal immigration program for citizens from countries with many irregular migrant encounters. All reported models include one-month lags of the dependent variables. In addition to testing our deterrence hypothesis, we test for spatial deflection and draw inferences about differences in the effects of externalization policy across the models. Therefore, we estimate model standard errors using a simultaneous variance-covariance matrix to account for cross-equation error correlation and facilitate cross-model hypothesis testing to evaluate evidence of spatial deflection, as detailed below. All models use robust standard errors clustered by the migrant's country of origin. Throughout, we summarize the substantive size of each effect as an average marginal effect on the expected number of monthly encounters, computed across the estimation sample rather than at variable means. Because the hurdle model is nonlinear and two-part, a conventional adjusted R^2 is not an appropriate measure of fit; we therefore report McFadden's pseudo- R^2 alongside the log-likelihood and the number of observations.

Our four hypotheses outlined above propose different functional forms and suitable tests to evaluate the argument presented in the theory section. Table 3 summarizes these hypotheses, their suggested functional forms, and our theoretical expectations. Without migrant deflection, if externalization restrictions effectively prevent migrants, we should see negative values on our visa restriction parameters (H1a). If restrictions are generally effective, the overall impact of restrictions across all transit regions (the sum of our visa restriction measure parameters) should be negative, indicating fewer migrant encounters in response to stricter visa travel policies (H1b).

Table 3. Theoretical overview.

Hyp.	Name	Functional form	Expectation(s)
1a	Deterrence - Regional	$\beta \text{ restrict}_i$	$\beta_i < 0$
1b	Deterrence - Aggregate	$\beta \text{ restrict}_i$	$\sum_i \beta_i < 0$; where i
			$\in \{Mex, CA, CR, SA\}$
2	Spatial Deflection	$\beta \text{ restrict}_j$	$IP[(\beta^{from} < 0) \cap (\beta^{to} > 0)] \neq 0$
			$IP[(\beta^{from} < \beta^{to})] \neq 0$
3	Temporal Deflection	$\beta_1 \text{ duration} + \beta_2 \text{ duration}^2$	U-shaped:
			$\beta_1 < 0$
			$\beta_2 > 0$
4	Enforcement Capacity	$\beta_1 \text{ duration} \times \beta_3 \text{ Darién Arrivals}_{la} + \beta_2 \text{ duration}^2$	U-shaped:
			$\beta_1 < 0$
			$\beta_2 > 0$

Hyp.	Name	Functional form	Expectation(s)
			Darién flow deepens initial decline:
			$\beta_3 < 0$

Note: All models contain lagged dependent variables, controls, and fixed effects. The Enforcement Capacity hypothesis only applies to arrivals at the US border due to south → north migration flows. In the functional forms, "restrict" refers to travel visa restrictions while "duration" refers to time (in months) since travel to a transit region became more restricted to migrants from an origin-country.

Spatial deflection indicates that, in response to visa restrictions imposed in a transit region, migrants reroute from their original destination pathway to an alternative to continue their migration. Empirically, this spatial deflection should appear as a negative regression coefficient in the destination model from which migrants deflect, and a positive coefficient in the model for the destination they reroute to. We test this by using the cross-equation correlated error structure in our model within a parametric simulation to assess the significance of the joint probability distribution for the condition $IP[(\beta^{from} < 0) \cap (\beta^{to} > 0)]$, where β^{from} corresponds to the visa restriction regression parameter in the model for the destination from which migrants are deflected and β^{to} corresponds to the visa restriction regression parameter in the model for the destination to which migrants reroute.

Geographically, in the context of south-to-north migration toward the US southwest border, our theory of spatial deflection suggests that migrants can divert away from Mexico or Central America in response to travel restrictions, reroute through the Darién Gap, and then continue their journey north on foot through Central America and Mexico to avoid more restrictive travel visa policies in those regions. If this happens, we expect the travel restriction regression parameters to be positive in both models. However, because migrants may initially reroute through the Darién, the positive effects are likely to be larger in the Darién model than in the US Southwest border model. This is especially true as some migrants may end their journey prematurely—possibly deciding to stay in countries like Mexico or Costa Rica instead of reaching the United States. To test for this possibility, we similarly employ a parametric simulation to evaluate the joint probability distribution corresponding of the condition: $IP[(\beta^{from} < \beta^{to})]$ where β^{from} corresponds to the travel visa regression parameter in the US southwest border model and β^{to} corresponds to the travel visa regression parameter in the Darién Gap model.

We assess the Temporal Deflection hypothesis (H3) by using our measure of months since visa restriction and its squared term. This quadratic form enables us to examine whether the effectiveness of restrictive externalization measures diminishes over time as migrants reroute.

Finally, we assess the Enforcement Capacity hypothesis (H4) by analyzing the interaction between months since visa restriction and the log of two-month-lagged Darién encounters. This interaction examines whether the long-term effectiveness of limiting migrant access to a transit region to reduce encounters at the destination country depends on the number of migrants passing through a downstream

route. Because there was no significant irregular north-to-south migration in the Western Hemisphere during our study period, we apply this model only to US border arrivals.¹

5. Results

Each of the three locations we examined saw a significant increase in monthly encounters during the post-Covid period. Between December 2021 and December 2023, monthly encounters at the US southwest border had risen by 475% (36k to 183k), at the US Caribbean sector by 2343% (1.2k to 54k), and in the Darién Gap by 583% (4.2k to 24k). These sharp rises in migrant numbers traveling to the US or passing through the Darién highlight both the difficulty of controlling migration and the limitations faced by externalization policies in reducing overall migrant numbers.

Consider first H1a – Regional Deterrence: Table 4 shows parameter estimates modeling the relationship between regional visa restrictions and encounters at the US southwest border (1), the US Caribbean sector (2), and the Darién Gap (3). Overall, these models do not support H1a that visa restrictions prevent irregular migrants or reduce encounters. In fact, in several regions, stricter visa policies are associated with more, not fewer, net predicted irregular migrant encounters, suggesting migration continued to grow despite efforts to curb movement. The heterogeneous effects of visa restrictions by geography are consistent with our theoretical expectations outlined in Table 1—as opposed to the homogenous reductions in encounters predicted by H1a. Throughout, we report each effect as an average marginal effect on the expected number of monthly encounters: for each observation we compute the change in expected encounters from a one-unit increase in the regional visa measure and average across the estimation sample.²

Consider encounters at the US southwest border: restricting travel from South America and Mexico results in significantly fewer encounters, decreasing by an estimated –970 and –285 encounters, respectively, in response to a 1-unit increase in our passport restriction measures for South America and Mexico. However, restrictions in the Caribbean and Central America are linked to significantly more predicted encounters at the US southwest border. Increasing visa restrictions in Central America by 1 unit leads to an estimated 1122 more encounters, while a similar increase in visa restrictions in the Caribbean region leads to an estimated 1772 more irregular encounters at the US southwest border. These patterns suggest that migrants respond to migration restrictions by seeking alternative (and less secure) routes to avoid encounters with authorities in both transit and destination countries.

Similar patterns indicating spatial deflection—analyzed in more detail shortly—also appear in the US Caribbean and Darién models. For instance, limiting access to South America significantly reduces the

¹ Stated differently, we have no expectations that the number of encounters at the US southwest border would condition how travel restrictions in Mexico or Central America would affect the number of irregular migrant encounters in the Darién Gap.

² We report the marginal effect of a one-unit change rather than of a discrete move from visa-free (0) to a pre-authorization requirement (2)—the most common observed change—because the discrete change is poorly behaved under the exponential hurdle. Averaging predicted counts across the sample at a counterfactual restrictiveness of 2 extrapolates the exponential conditional mean well beyond the support of the high-volume origins and yields implausibly large predictions, whereas evaluating the same change at the covariate means collapses to a fraction of an encounter because the representative origin-month records almost no encounters. The one-unit average marginal effect, evaluated at observed restriction levels, is stable and is therefore the quantity we report.

number of migrants passing through the Darién Gap (and reroutes them through the Caribbean), which makes sense because migrants would need access to South America before starting their journey north from Colombia through the Darién. Conversely, restricting migrant access to Central America causes a notable increase in migrant encounters in the Darién, as rerouting behavior occurs and migrants look for new routes to reach their destination. This rerouting through the Darién likely also explains why Central American restrictions lead to more encounters at the US southwest border—rerouting helps migrants avoid travel barriers they would otherwise face on restricted alternative routes.

While the results shown in Table 4 do not support Regional Deterrence (H1a), the findings for Aggregate Deterrence (H1b) provide some nuance. Overall, more restrictive visa policies across the four transit regions south of the US southwest border lead to significantly more irregular migrant encounters at that border, again providing evidence against a hypothesized deterrence effect. On average, our model predicts 430 [95% CI: 50, 810] additional monthly arrivals from origin countries if the aggregate travel visa restrictiveness in our four transit regions increases by one. Given that the average monthly encounters for migrants from sending countries are about 1600, this shift indicates routing behavior as migrants navigate travel visa restrictions on their way to the US southwest border. The increase in border encounters, given stricter aggregate travel visa requirements, makes sense if migrants adapt to closed legal routes by finding alternative ways to reach the border. In the aggregate, our model shows that visa restrictions do not appear to deter encounters in the Darién Gap, as the combined impact of the passport measures across the four regions is not statistically significant at conventional levels but directionally consistent with increasing migration.

In the Caribbean, however, these results suggest that, overall, visa restrictions tend to decrease encounters at that border sector. For an equal origin country, a one-unit increase in our visa restrictiveness measures across the four transit regions in our model is associated with an estimated 8 fewer monthly arrivals in the US Caribbean sector. In this sector, average monthly encounters from countries of migrant origin average 22, so this decline represents a significant drop in irregular migrant encounters. This indicates that US efforts to dissuade migrants by urging downstream countries to tighten visa restrictions are more effective at controlling migration through the maritime Caribbean route than via the overland US southwest border route.

As the results in Table 4 indicate, the contrasting signs across the three corridor models are the signature of Spatial Deflection (H2): a restriction that lowers encounters on one route tends to raise them on another. We now formally test these cross-corridor patterns.

Table 4. Travel visa restriction results - Deterrence and Spatial Deflection hypotheses.

	<i>Dependent variable: Irregular encounters</i>		
	(US southwest - SW)	(US Caribbean - CR)	(Darién Gap - DA)
Caribbean	2.696**	−1.641	0.466
	[0.605, 4.787]	[−3.644, 0.362]	[−1.052, 1.984]
Mexico	−0.433**	0.101	0.442

	[-0.780, -0.0871]	[-0.0310, 0.512]	[-0.405, 1.290]
Central America	1.707**	-2.449*	2.958**
	[0.566, 2.848]	[-5.187, 0.289]	[1.074, 4.841]
South America	-1.477**	0.397*	-1.716**
	[-2.062, -0.892]	[-0.0179, 0.811]	[-2.768, -0.664]
$\Sigma\beta$ restrict	2.493**	-3.592**	2.150
	[0.331, 4.655]	[-5.122, -2.062]	[-0.321, 4.621]
Unit and time fixed effects	Yes	Yes	Yes
Lagged encounters	Yes	Yes	Yes
Control variables	Yes	Yes	Yes
Obs.	7644	7644	7301
Log likelihood	-14239	-2185	-9949
McFadden's pseudo-R ²	0.193	0.302	0.209

*Note: * $p < 0.1$; ** $p < 0.05$. Entries are exponential-hurdle count-equation coefficients; confidence intervals are 95%, computed using robust standard errors clustered on origin country. The encounter-unit effects discussed in the text are average marginal effects derived from these coefficients.*

To evaluate the statistical significance of these differences and determine if they align with our expectations for Spatial Deflection validity, Table 5 presents the results of our parametric tests for destination rerouting caused by travel restrictions across four transit regions. The results in Table 5 support our Spatial Deflection Hypothesis (H2) and are consistent with migrants moving from south to north through the Darién, Central America, and then Mexico before crossing the US southwest border, or with migrants using the Caribbean as an alternative entry point into the US. For example, regarding the Caribbean transit region, restrictions that limit migrants' travel access to Caribbean

countries divert migrants from entering the US via its Caribbean sector and instead direct them toward the US southwest border. Our findings indicate that the impact of Caribbean restrictions is negative in the US Caribbean entry-point model (reducing irregular migrant encounters) and positive in the US southwest model (increasing irregular migrant encounters), with a statistically significant test statistic = 4.04 and a p-value of 0.001. This provides evidence of spatial deflection from the Caribbean to the US southwest border in response to visa travel restrictions.

Table 5. Spatial-deflection and net-deflection tests.

Panel A. Cross-corridor deflection tests (H2). Each row reports a restriction region, the hypothesized deflection from one corridor to another, the joint condition tested, and the test statistic from the parametric cross-equation simulation.

Restriction in	Deflection (from → to)	Joint condition tested	Test statistic
Caribbean	CR → SW	$IP[(\beta^{cR} < 0) \cap (\beta^{sW} > 0)]$	4.04**
Caribbean	CR → DA	$IP[(\beta^{cR} < 0) \cap (\beta^{DA} > 0)]$	1.48
Mexico	SW → DA	$IP[(\beta^{sW} < 0) \cap (\beta^{DA} > 0)]$	2.33**
Mexico	SW → DA → SW	$IP[(\beta^{sW} < \beta^{DA})]$	4.12**
Mexico	SW → CR	$IP[(\beta^{sW} < 0) \cap (\beta^{cR} > 0)]$	1.48
Central America	SW → DA → SW	$IP[(\beta^{sW} < \beta^{DA})]$	3.01**
Central America	SW → CR	$IP[(\beta^{sW} < 0) \cap (\beta^{cR} > 0)]$	0.02
South America	SW → CR	$IP[(\beta^{sW} < 0) \cap (\beta^{cR} > 0)]$	5.58**
South America	DA → CR	$IP[(\beta^{DA} < 0) \cap (\beta^{cR} > 0)]$	5.35**

Panel B. Net deflection across corridors (H1b, row-sum test). Each row sums a region's average marginal effect across all three corridor models, in encounters per one-unit increase in the regional visa measure. A net effect of zero would indicate that deflection redistributes a fixed flow; nonzero net effects indicate that a region's restriction changes system-wide encounters.

Restriction in	Net effect (encounters)	Std. error	<i>p</i>
Caribbean	+1,853	359	<0.001
Central America	+1,641	340	<0.001
Mexico	-207	75	0.006
South America	-1,273	167	<0.001

Note: * $p < 0.10$; ** $p < 0.05$. SW = US southwest border model, CR = US Caribbean sector model, DA = Darién Gap model. Panel A test statistics are evaluated against a normal density for the stated

joint condition. Panel B sums the average marginal effects across the three corridor models; standard errors treat the corridor models as independent.

Restrictions in the remaining three regions also match our theoretical expectations for H2 and the geography of irregular migration through these transit areas. Our analysis shows that travel restrictions in Mexico and Central America cause migrants to reroute through the Darién Gap to avoid them, moving northward overland through Central America and Mexico toward the US southwest border. As expected, we find no evidence that restrictions in these two regions divert migrants to Caribbean countries for a more dangerous sea migration. However, restrictions in South America that prevent migrants from starting a northbound trip to the US southwest border do push migrants toward Caribbean countries—our results indicate that encounters at the Darién and US southwest border decrease when South American restrictions are in place, while encounters in the US Caribbean increase. Overall, these findings support the idea of irregular migrant Spatial Deflection (H2) in response to travel visa restrictions, aligning with our theoretical expectations and the geography of irregular migration across these regions.

Panel B aggregates the Table 4 estimates in a second way. Whereas Table 4 reports each region’s effect on a single corridor, Panel B sums a region’s average marginal effects across all three corridors—the net effect of that region’s restriction on system-wide encounters. A value near zero would indicate pure redistribution across routes; the large signed net effects we estimate indicate instead that restrictions in the staging regions (Mexico and South America) reduce the system-wide total, while restrictions in Central America and the Caribbean increase it as migration persists and even grows.

These spatial-deflection patterns are robust to alternative estimators and to the major enforcement-policy changes that overlap our window. Re-estimating the models with Poisson pseudo-maximum-likelihood that absorbs origin and calendar-month fixed effects—thereby differencing out the secular post-pandemic surge in encounters, the Title 42 expulsion regime and its May 2023 expiry, and any other shock common to all origins in a given month—leaves the central deterrence and deflection channels intact. In this alternative model, identified only from within-origin, within-month variation, stricter visa policy in Mexico continues to reduce encounters at the US southwest border; stricter Central American visa policy continues to raise them as migrants reroute overland; and stricter South American visa policy continues to depress crossings through the Darién, consistent with South America serving as the staging ground from which the overland journey begins. Adding explicit controls for the CHNV parole program and the Title 42 period leaves every deflection coefficient stable in sign, magnitude, and significance. We deliberately retain the full December 2019–December 2023 window, including the pandemic period, because it supplies both the COVID-era suppression of mobility and the post-pandemic surge that the design exploits; the common pandemic shock is absorbed by the month fixed effects and the COVID indicators. These checks, together with zero-inflated count specifications, are reported in the appendix.

While we find strong evidence in support of spatial deflection, this process does not occur immediately, as migrants need to recognize the implementation of restrictive policy measures, change their plans, and ultimately reroute to a new entry point to begin their migration. We now evaluate this possibility and the evidence supporting our Temporal Deflection Hypothesis (H3) in Table 6, which summarizes the parameter estimates for visa policy restrictions from our quadratic regression models fitted on aggregate data. Outcomes are (1) combined US southwest border and Caribbean sector encounters and (2) Darién encounters; 1, 6, and 12 months after migrant access to a region is restricted. As these results show, the effect of visa restrictions is nonlinear, with their effectiveness on migrant encounters shifting over time.

Table 6. Restriction time results - Temporal Deflection hypothesis.

	United States		Darién Gap	
	CA/CR	SA	CA/CR	SA
Month 1	-0.0399*	-0.0819**	-0.0331	0.0105
	(0.0250)	(0.0327)	(0.0326)	(0.1168)
Month 6	-0.1293	-0.2676**	-0.1061	-0.2348**
	(0.0877)	(0.0947)	(0.1287)	(0.0893)
Month 12	0.0061	0.0015	0.0105	-1.432**
	(0.0989)	(0.3990)	(0.1168)	(0.5612)

*Note: * $p < 0.1$; ** $p < 0.05$. Clustered robust standard errors in parentheses. Conditional effect of visa restrictions in Central America/Caribbean and South America on US and Darién Gap encounters 1-, 6-, and 12-months after the restriction goes into effect.*

While these results indicate an initial decline in encounters at the US border one month after restrictions in Central America or the Caribbean, the effect is only temporary, becoming statistically insignificant two months after the restriction. Similarly, visa restrictions introduced in South America decrease encounters at the US border most noticeably around six months after a downstream transit region enforces restrictions, but encounters then rise again and eventually lose significance. Conversely, in the Darién Gap, these results show that migrant encounters steadily decrease over time following a visa restriction in South America. Figure 5 illustrates these trends over a full year after visa policy restrictions in both Central and South America for encounters at the US border and the Darién Gap.

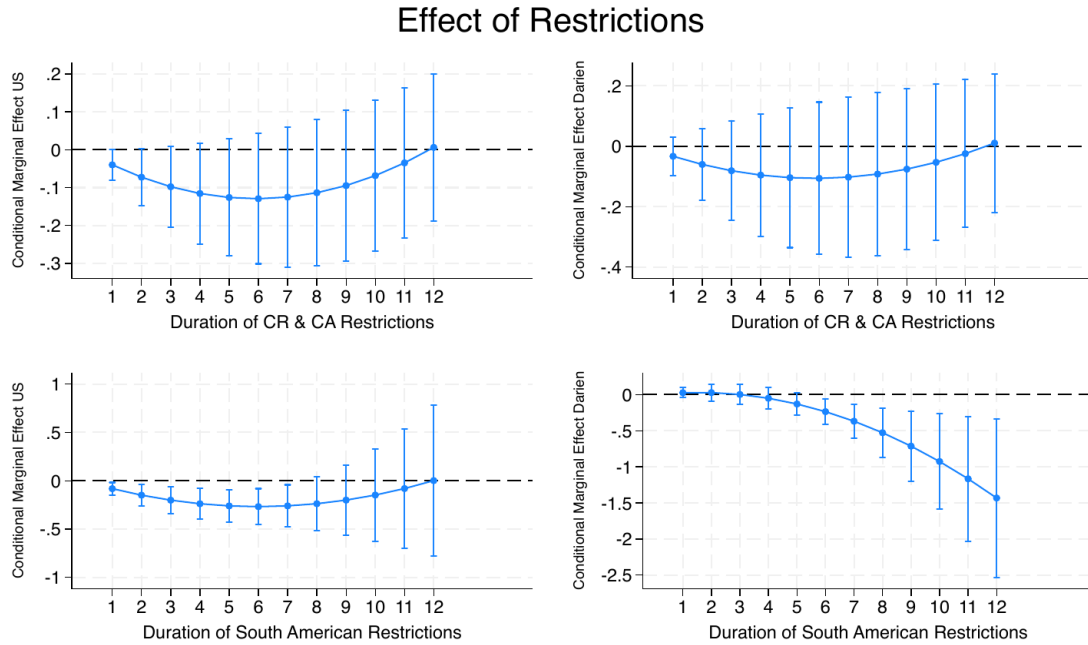


Figure 5. Conditional marginal effect of a visa restriction over its duration. Each panel plots how the effect of a one-unit regional restriction on encounters evolves over the months since the restriction took effect: the left column reports the effect on US encounters and the right column on Darién encounters, with Caribbean and Central American restrictions in the top row and South American restrictions on the bottom. The effect on US encounters traces a U-shape—an initial decline that deepens through the middle months and then attenuates toward zero—and is distinguishable from zero only over that early-to-middle range; the Darién–South America panel (lower right) is monotonically negative rather than U-shaped. Whiskers show the 90% confidence interval at each month.

To better illustrate these effects, consider the case of Cuban migrants trying to enter the United States. Figure 6 shows predictions of the estimated number of Cuban encounters at both the US border and in the Darién Gap from 1 to 12 months after visa policy restrictions in Central and South America were implemented. In the month immediately following an increase in restrictions, Cuban arrivals at US borders dropped significantly, by approximately 708. However, as time goes on—and migrants adapt—this effect lessens, and by six months, the model estimates 281 fewer migrants. By 9 months, the change becomes statistically insignificant. This 9-month adjustment likely reflects migrants finding new routes into the US, as described previously.

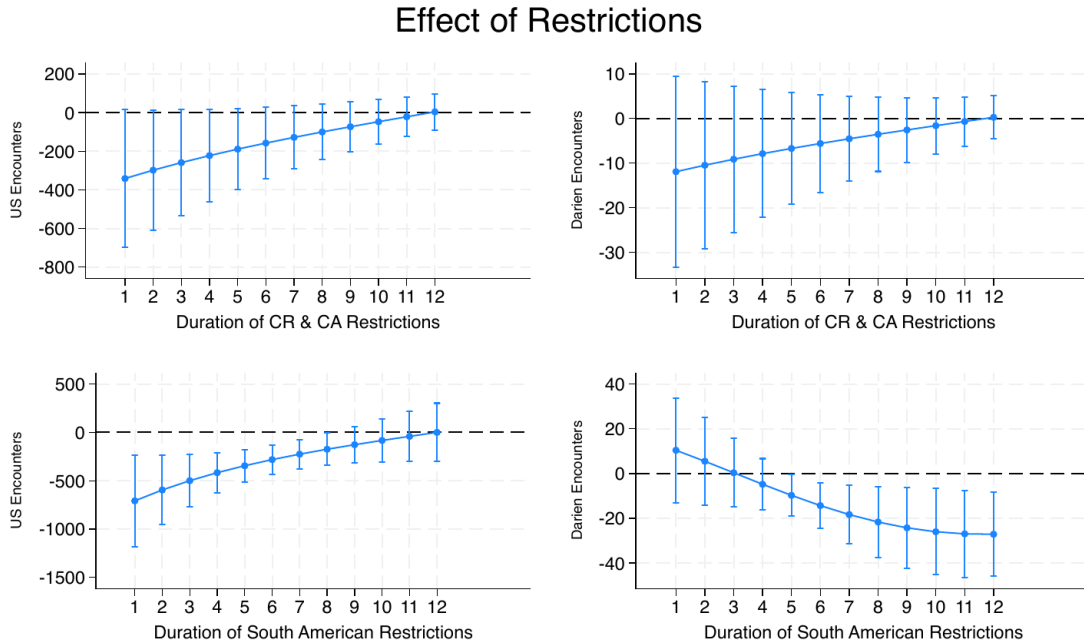


Figure 6. Predicted change in Cuban encounters over the duration of a visa restriction. As in Figure 5, but expressed in encounters rather than log points and evaluated for Cuban nationals. The decline in US-border encounters is largest and clearly distinguishable from zero in the first months after a restriction and returns toward zero by months nine to twelve; on the Darién, the South American restriction produces a delayed, monotonically negative effect that becomes distinguishable from zero only after several months.

In contrast, encounters with Cubans in the Darién Gap show a pattern clearly different from those at the US border, aligning with our theoretical expectations. Initially, limiting access to Cuban migrants does not significantly reduce encounters in the Darién for about six months, as migrants already in transit continue moving through the area. However, as the effects of restricted access to South America persist, the reduction becomes statistically significant by six months, indicating roughly 14 fewer Cubans pass through the Darién each month. By twelve months, this effect stabilizes at a new level, with approximately 27 fewer Cuban encounters per month. This makes sense because when a South American route closes to Cubans, fewer will try to cross that way, and instead they turn to Central American routes heading north to the US border (such as via Nicaragua) or to maritime routes. After about nine months, the impact of South American restrictions on US arrivals becomes statistically insignificant.

Given the strong evidence from the previous analysis on Spatial and Temporal Deflection showing how the Darién Gap influences migrant routing behaviors toward the United States, what role does the scale of migration through this region play in the long-term effectiveness of encounter restrictions to limit arrivals at the US border? Our Enforcement Capacity Hypothesis (H4) suggests that encounters in the Darién should strengthen the impact of upstream restrictions over time, resulting in more noticeable decreases in US encounters initially, as the visa policy shift aims to divert migrants already on their journeys. However, consistent with our earlier findings, we expect this effect to diminish over time and, as migrants seek new routes to reach their final destinations, potentially reverse and turn positive.

Table 7 summarizes the parameter conditionally implied by the interaction effect between our visa duration measure and lagged Darién encounters on US border encounters. This is done while holding Darién encounters at three key levels—the 20th, 50th, and 90th percentiles—using reported encounter figures from our data that correspond to roughly 3, 12, and 315 monthly encounters for an origin country.

Table 7. Restriction time results - Enforcement Capacity hypothesis.

Darién encounters percentile	Month 1	Month 6	Month 12	Month 24
20 th percentile	−0.0181	−0.0361	0.1009	0.8947**
	(0.0200)	(0.0781)	(0.1091)	(0.2947)
50 th percentile	−0.0313*	−0.1000	0.0105	0.8628**
	(0.0169)	(0.0738)	(0.0928)	(0.2403)
90 th percentile	−0.0599**	−0.2383**	−0.1854**	0.7938**
	(0.0175)	(0.0764)	(0.0919)	(0.2194)

*Note: * $p < 0.1$; ** $p < 0.05$. Clustered robust standard errors in parentheses. Values reflect visa duration restriction parameter estimates in US encounter model 1-, 6-, 12-, and 24-months after the restriction goes into effect conditional on observed Darién encounters fixed at the 20th percentile, 50th percentile, and 90th percentile values.*

Consistent with our expectations, the impact of implementing visa restrictions in Mexico, Central America, and the Caribbean becomes more noticeable as more migrants pass through the Darién Gap. These restrictions limit in-transit migrants, leading to significant short-term drops in encounters during the first six months after a restriction. The largest decrease in migrant encounters resulting from this policy change occurs among migrants from countries at the 90th percentile of reported Darién encounters—that is, those most dependent on and likely to use the route. However, regardless of the number of migrants crossing the Darién, over time, the restriction’s effect on reducing migrant encounters at the US border diminishes to zero and becomes statistically insignificant. After about 15 months, the effect becomes positive and significant—that is, migrant encounters increase—highlighting migrant rerouting in response to restrictive migration policies and the limited long-term effectiveness of these policies. Figure 7 shows how the number of migrants crossing the Darién Gap affects the effectiveness of visa policy restrictions over time, leading to an initial sharp decline in US border encounters that then levels off and begins to rise again after roughly nine months.

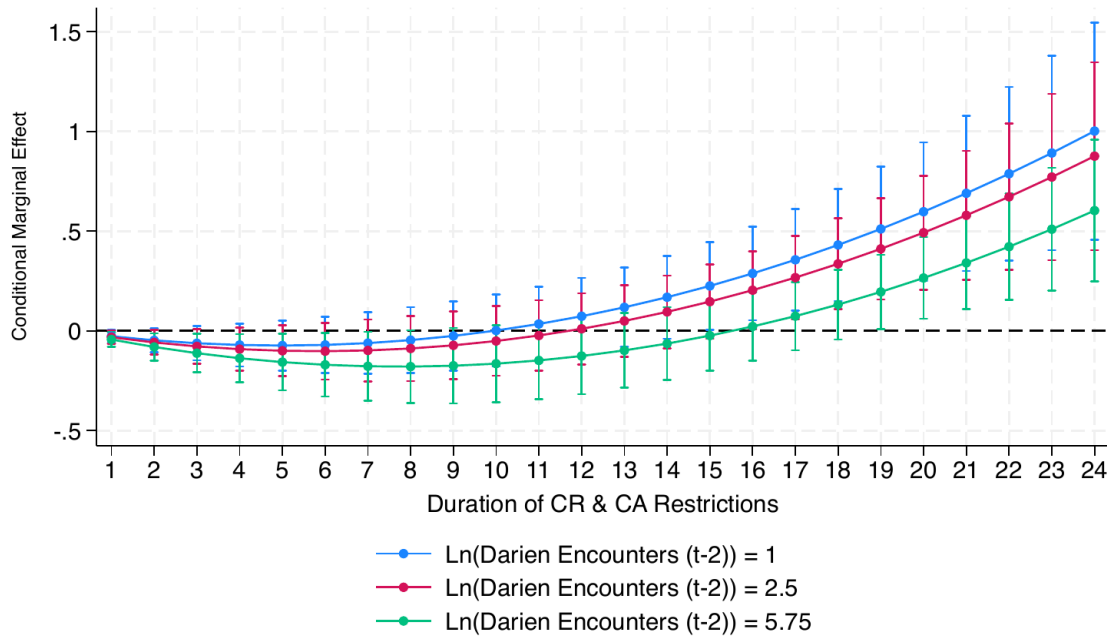


Figure 7. Enforcement capacity: conditional marginal effect of a visa restriction on US-border encounters over the restriction's duration, evaluated at the 20th, 50th, and 90th percentiles of lagged Darién volume (natural-log scale). Source: authors' estimates.

Taken together, these results support our Spatial Deflection hypothesis (H2) across all three corridors and our Enforcement Capacity hypothesis (H4); the Temporal Deflection pattern (H3)—an initial decline in migration that fades and then reverses—is clearest for the South America-to-US route, whereas on the Darién, the effect of South American visa restrictions is monotonic rather than U-shaped, a distinction we do not paper over. Migrants, based on total monthly encounters, demonstrate a high responsiveness to shifting policy landscapes that limit or completely block their access to transit regions. In contrast, evidence supporting the effectiveness of externalization in deterring migrants (H1a and H1b) is at best mixed. While some evidence suggests that externalization restrictions can reduce migrant arrivals in specific areas (e.g., the US Caribbean sector), overall, there is little evidence that changes in restrictive visa policies lead to significant declines in monthly irregular migrant encounters. Instead, our analysis shows that when one region closes its borders to migrants, they reroute and find alternative pathways to reach their destinations. This process takes time, leading to short-term drops in encounters following a restriction—potentially causing some to prematurely regard the policy an outright success. However, our findings offer a more nuanced view—these initial declines in encounters fade over time as migrants discover new routes and adapt to restrictive visa policies to reach their destinations.

6. Conclusion

Migration policy externalization occurs when governments attempt to limit migration across their borders by encouraging or pressuring neighboring countries to restrict arrivals. In this paper, we examine the effectiveness of these externalization efforts, focusing on a common method they use:

travel visa restrictions. Countries that receive migrants often push their neighbors to tighten visa rules for nations with high levels of emigration. But do these strategies actually work?

Our findings indicate that these measures have limited success, effective only in the short term and not over the long run. In a sense, externalization through visa controls is like a country's ability to regulate capital flows: controls act as barriers but not complete seals. Rerouting migrants takes time; sometimes, policymakers mistakenly declare success when initial migrant numbers decrease after restrictions are implemented. However, our results show this confidence is misplaced—over time, migration often returns to previous levels or even increases significantly as migrants discover new routes. The volume of migrants traveling through pathways downstream of restrictions can amplify this pattern, causing larger initial drops in encounters shortly after restrictions are enforced. Yet, these early reductions fade, and our models indicate that after about nine to fifteen months, the point estimate turns positive—sooner where Darién volume is low, later where it is high—reaching statistical significance somewhat later, as migrants adapt by rerouting and finding new ways to reach their destinations.

Our results highlight several promising avenues for future research, including: using visa policy as a soft power tool in foreign relations, investigating climate change as a driver of irregular migration even amid bureaucratic obstacles, and examining whether our findings are applicable to other regions — particularly Europe and migration across the Mediterranean or through Turkey into Greece. While Mesnard et al. (2024)'s findings support our evidence for spatial deflection en route to Europe, additional evidence within Europe and beyond for our temporal deflection hypothesis offers an opportunity to enhance our external validity. Nicaragua's decision to lift visa restrictions on Cuban nationals raises interesting questions about why countries might use visa policies as tools for migration diplomacy and regional engagement. Under what conditions will a country open its borders to transit migrants to punish a neighbor? One challenge will be distinguishing between when a country adjusts visa policies for domestic political reasons and when it does so under external pressure. In the Nicaragua case, the motivation appears clear, but, to our knowledge, no comprehensive database exists that tracks the political factors behind visa policy changes. With migration expected to increase through the mid-21st century, countries may begin to weaponize large population movements as a new aspect of international rivalry.

Our findings raise significant questions about the long-term effectiveness of externalizing migration policies, overall, and of visa restrictions, specifically. Since migrants can adapt by rerouting in response to visa limits, these policies often only delay arrivals at best or have no overall impact at worst. They also put migrants at greater risk by pushing them onto more dangerous and deadly routes to reach their destinations. Without strong regional policy coordination, such as broad visa travel bans against migrants from certain countries—which is nearly impossible due to geopolitical issues like Nicaragua-US tensions—these policies do not seem to be the most effective way to manage irregular migrant arrivals.

The emergence of the second Trump administration has since significantly reduced irregular entries into the US (Montoya-Galvez 2025), but this is likely more due to the administration's strict enforcement policies rather than visa restrictions, which have remained largely unchanged since the data in this study was collected. Similarly, while “Safe Third Country” agreements have expanded under the second Trump administration's policies—another form of border externalization—these mainly seem to focus on deporting long-term detainees rather than new arrivals. Future research should also explore the connection between border externalization and interior enforcement, as well as how they jointly influence migration intentions and routes. Ultimately, creating safe and legal pathways for migration and addressing poverty and violence in South and Central American countries through targeted development and humanitarian aid programs probably has a greater potential to reduce

migration pressure in a rights-respecting and sustainable, long-term manner. Policies like these could prevent future migrants from having to undertake dangerous journeys in the first place.

Finally, a full accounting of visa restrictions as a policy instrument must weigh their costs beyond migration control. Visa requirements depress bilateral trade, foreign investment, and tourism, imposing economic costs on the imposing state and its partners that a narrow focus on deterrence overlooks (Czaika and Neumayer 2017). That these instruments redistribute irregular migration more than they reduce it, while carrying measurable economic costs, sharpens the case for evaluating externalization against its full effects rather than against arrivals alone.

References

- Adamson, Fiona B, and Kelly M. Greenhill. 2023. “Deal-Making, Diplomacy and Transactional Forced Migration.” *International Affairs* 99 (2): 707–25. <https://doi.org/10.1093/ia/iad017>.
- Amaral, Jordi. 2023. “Washington Thinks Regionally, But What Does It Prioritize?” *Americas Migration Brief*. May 25, 2023. <https://www.migrationbrief.com/p/americas-migration-brief-washington>.
- Ambrosius, Christian, and David A. Leblang. 2020. “Exporting Murder: US Deportations and the Spread of Violence.” *International Studies Quarterly* 64 (2): 316–28. <https://doi.org/10.1093/isq/sqaa014>.
- Amerise, Atahualpa. 2024. “El Millonario Negocio de Nicaragua Como Puerta de Entrada Para Los Migrantes Irregulares Hacia EE.UU.” *BBC News Mundo*, July. <https://www.bbc.com/mundo/articles/cxrr2q3vnn5o>.
- Avdan, Nazil, Andrew S. Rosenberg, and Christopher F. Gelpi. 2023. “Where There’s a Will, There’s a Way: Border Walls and Refugees.” *Journal of Peace Research* 0 (0). <https://doi.org/10.1177/00223433231200918>.
- Bahar, D. (2025). Not a border crisis, but a labor market crisis: The often overlooked “pull” factor of U.S. border crossings. *Journal of Policy Analysis and Management*, 44(2), 674–680. <https://doi.org/10.1002/pam.22665>
- Baud, Michiel, and Willem van Schendel. 1997. “Toward a Comparative History of Borderlands.” *Journal of World History* 8 (2): 211–42.
- Bermeo, Sarah Blodgett, and David Leblang. 2015. “Migration and Foreign Aid.” *International Organization* 69 (3): 627–57. <https://doi.org/10.1017/S0020818315000119>.
- Bernhard, William T., and David Leblang. 2016. “Sovereign Debt, Migration Pressure, and Government Survival.” *Comparative Political Studies* 49 (7). <https://doi.org/10.1177/0010414015621079>.
- Buehler, Matt, Kristin E. Fabbe, and Kyrkopoulou Eleni. 2022. “Thy Neighbor’s Gendarme? How Citizens of Buffer States in North Africa View EU Border Security Externalization.” *Journal of Immigrant and Refugee Studies* 22 (2): 371–85. <https://doi.org/10.1080/15562948.2022.2037035>.

Campani, Giovanna. 2018. "The Migration Crisis Between Populism and Post-Democracy." In *Populism and the Crisis of Democracy*, edited by Gregor Fitzi, Juergen Mackert, and Bryan Turner. London, UK: Routledge.

Carrera, Sergio, Maryellen Fullerton, Blanca Garcés-Mascreñas, Susan York Kneebone, Ana López Sala, Ngo Chun Luk, and Lina Vosyliūtė. 2018. "Offshoring Asylum and Migration in Australia, Spain, Tunisia and the US." Brussels, BE: Centre for European Policy Studies.
<https://www.ceps.eu/ceps-publications/offshoring-asylum-and-migration-australia-spain-tunisia-and-us/>.

Clemens, Michael A., and Hannah M. Postel. 2018. "Deterring Emigration with Foreign Aid: An Overview of Evidence from Low-Income Countries." *Population and Development Review* 44 (4): 667–93.

Confidencial. 2024. "Ortega Regime Brings in Millions from Migrant Fee Despite US Sanctions." *Confidencial*, June. <https://confidencial.digital/english/ortega-regime-brings-in-millions-from-migrant-fees-despite-us-sanctions>.

Cope, Kevin, and David Leblang. 2023. "Immigration Law as Foreign Relations." In *The Oxford Handbook of Comparative Immigration Law*. New York: Oxford University Press.

Cordero, Guillermo, Piotr Zagórski, and José Rama. 2024. "Economic Self-Interest or Cultural Threat? Migrant Unemployment and Class-Based Support for Populist Radical Right Parties in Europe." *Political Behavior* 46 (2): 1397–1416. <https://doi.org/10.1007/s11109-023-09877-8>.

Coriat, Adelita. 2024. "Exclusiva: EE. UU. Busca Sumar a Costa Rica Al Programa de Deportaciones." *La Estrella de Panamá*, July.
<https://www.laestrella.com.pa/panama/nacional/exclusiva-ee-uu-busca-sumar-a-costa-rica-al-programa-de-deportaciones-YE7897919>.

Cragg, John G. 1971. "Some Statistical Models for Limited Dependent Variables with Application to the Demand for Durable Goods." *Econometrica* 39 (5): 829–44. <https://doi.org/10.2307/1909582>.

Czaika, Mathias, and Hein de Hass. 2017. "The Effect of Visas on Migration Processes." *International Migration Review* 51 (4): 893–926. <https://doi.org/10.1111/imre.12261>.

Czaika, M., & Hobolth, M. (2016). Do restrictive asylum and visa policies increase irregular migration into Europe? *European Union Politics*, 17(3), 345-365.
<https://doi.org/10.1177/1465116516633299>

Czaika, Mathias, and Eric Neumayer. 2017. "Visa Restrictions and Economic Globalisation." *Applied Geography* 84: 75–82. <https://doi.org/10.1016/j.apgeog.2017.04.011>.

Debray, Alix, Ilse Ruysen, and Kerilyn Schewel. 2023. "The Aspiration to Stay: A Global Analysis." *International Migration Review* 0 (0). <https://doi.org/10.1177/01979183231216087>.

Denise, Dresser. 2024. "Mexico's Vote for Autocracy." *Foreign Affairs*, May.
<https://www.foreignaffairs.com/mexico/mexicos-vote-autocracy>.

Dennison, James, and Andrew Geddes. 2019. "A Rising Tide? The Salience of Immigration and the Rise of Anti-immigration Political Parties in Western Europe." *The Political Quarterly* 90 (1): 107–16. <https://doi.org/10.1111/1467-923X.12620>.

Deutschmann, Emanuel, Lorenzo Gabrielli, Alexandra Orlova, Niklas Harder, and Ettore Recchi. 2025. "A Time Penalty for the Global South? Inequalities in Visa Appointment Wait Times at German Embassies and Consulates Worldwide." *Political Geography* 124: 103440. <https://doi.org/10.1016/j.polgeo.2025.103440>.

EFE Noticias. 2024. "Costa Rica Estudia Acuerdo Con EE.UU. Para Repatriar Migrantes." *EFE Noticias*, July. <https://efe.com/mundo/2024-07-18/costa-rica-estudia-acuerdo-con-ee-uu-para-repatriar-migrantes>.

FitzGerald, David Scott. 2019. *Refuge Beyond Reach: How Rich Democracies Repel Asylum Seekers*. Oxford, New York: Oxford University Press.

Fitzgerald, Jennifer, David Leblang, and Jessica Teets. 2014. "Defying the Law of Gravity: The Political Economy of International Migration." *World Politics* 66 (3): 406–45. <https://doi.org/10.1017/S0043887114000112>.

Gammeltoft-Hansen, T., & Tan, N. F. (2018). The End of the Deterrence Paradigm? Future Directions for Global Refugee Policy. *Journal on Migration and Human Security*, 5(1), 28-56. <https://doi.org/10.1177/233150241700500103>

Greenhill, Kelly M. 2016. "Migration as a Weapon in Theory and in Practice." *Military Review*. <https://www.armyupress.army.mil/Portals/7/military-review/documents/Soc-Media/MR-Illegal-Immigration-Greenhill.pdf>.

Guerra, Gil. 2024. "New Data Suggests Political Repression, Slowing Economy Driving Irregular Chinese Migration to U.S." *Niskanen Center*, May. <https://www.niskanencenter.org/new-data-suggests-political-repression-slowing-economy-driving-irregular-chinese-migration-to-u-s/>.

Hainmueller, Jens, and Michael Hiscox. 2010. "Attitudes Toward Highly Skilled and Low-Skilled Immigration: Evidence from a Survey Experiment." *SSRN Scholarly Paper*. <https://papers.ssrn.com/abstract=1788422>.

Helbling, Marc, and David Leblang. 2019. "Controlling Immigration? How Regulations Affect Migration Flows." *European Journal of Political Research* 58 (1): 248–69.

Herz, John H. 1957. "Rise and Demise of the Territorial State." *World Politics* 9 (4): 473–93. <https://doi.org/10.2307/2009421>.

HRW. 2022. "Mexico/Central America: New Visa Restrictions Harm Venezuelans." Human Rights Watch. <https://www.hrw.org/news/2022/07/05/mexico/central-america-new-visa-restrictions-harm-venezuelans>.

Ilyankou, Ilya. 2024. "Passport Index Dataset." <https://github.com/ilyankou/passport-index-dataset>.

IOM. 2022. *Latest Migrant Tragedy in Texas Highlights Crisis Along Deadliest Migration Land Route*. International Organization for Migration (IOM). <https://www.iom.int/news/latest-migrant-tragedy-texas-highlights-crisis-along-deadliest-migration-land-route>.

Jaulin, Thibaut, Alice Mesnard, Filip Savatic, Jean-Noël Senne, and Hélène Thiollot. 2020. "Externalization Policies and Their Impacts on Migrant and Refugee Flows to Europe During the 'Crisis.' A Preliminary Study." *The Migration Governance; Asylum Crises Project*. <https://sciencespo.hal.science/hal-03094529>.

- Laube, Lena. 2019. "The Relational Dimension of Externalizing Border Control: Selective Visa Policies in Migration and Border Diplomacy." *Comparative Migration Studies* 7 (1): 29. <https://doi.org/10.1186/s40878-019-0130-x>.
- . 2021. "Diplomatic Side-Effects of the EU's Externalization of Border Control and the Emerging Role of 'Transit States' in Migration Diplomacy." *Historical Social Research / Historische Sozialforschung* 46 (3): 78–105.
- Linebarger, Christopher, and Alex Braithwaite. 2020. "Do Walls Work? The Effectiveness of Border Barriers in Containing the Cross-Border Spread of Violent Militancy." *International Studies Quarterly* 64 (3): 487–98.
- Mau, Steffen, Heike Brabandt, Lena Laube, and Christof Roos. 2012. *Liberal States and the Freedom of Movement: Selective Borders, Unequal Mobility*. London, UK: Palgrave Macmillan. <https://doi.org/10.1057/9781137016751>.
- Menjívar, Cecilia. 2014. "Immigration Law Beyond Borders: Externalizing and Internalizing Border Controls in an Era of Securitization." *Annual Review of Law and Social Science* 10: 353–69. <https://doi.org/10.1146/annurev-lawsocsci-110413-030842>.
- Mesnard, A., Savatic, F., Senne, J.-N. and Thiollet, H. (2024), Revolving Doors: How Externalization Policies Block Refugees and Deflect Other Migrants across Migration Routes. *Population and Development Review*, 50: 607-642. <https://doi.org/10.1111/padr.12650>
- Milner, Helen V., and Robert O. Keohane. 2010. "Internationalization and Domestic Politics: An Introduction." In *Internationalization and Domestic Politics*, edited by Helen V. Milner and Robert O. Keohane, 3–24. Cambridge Studies in Comparative Politics. Cambridge: Cambridge University Press. <https://doi.org/10.1017/CBO9780511664168.002>.
- Montoya-Galvez, Camilo. 2025, October 7. "Illegal crossings along U.S.-Mexico border plummet to lowest annual level since 1970." CBS News. <https://www.cbsnews.com/news/illegal-crossings-immigration-us-mexico-southern-border-lowest-level-1970-trump-dhs/>.
- Orozco, Manuel. 2024a. "Daniel Ortega and the Weaponization of Migration Against the United States." *The Dialogue*, January. <https://www.thedialogue.org/blogs/2024/01/daniel-ortega-and-the-weaponization-of-migration-against-the-united-states/>.
- . 2024b. "A Foreign Policy Problem: Ten Facts about Migration to the US." *The Inter-American Dialogue*, June. <https://www.thedialogue.org/analysis/a-foreign-policy-problem-ten-facts-about-migration-to-the-us>.
- . 2024c. "Central American Migration: In Numbers." *The Inter-American Dialogue*, June. <https://www.thedialogue.org/analysis/central-american-migration-in-numbers>.
- Pacciardi, Agnese and Joakim Berndtsson. 2022. "EU border externalisation and security outsourcing: exploring the migration industry in Libya." *Journal of Ethnic and Migration Studies* 48(17):4010–4028.
- Passport Index. 2023. "Passport Index." <https://www.passportindex.org>.
- Peters, Margaret. 2017. *Trading Barriers: Immigration and the Remaking of Globalization*. Princeton, NJ: Princeton University Press.

- Primicias. 2024. "Gobierno Aboga Para Que Migrantes Ecuatorianos Accedan Al TPS En Estados Unidos." *Primicias*, January. <https://www.primicias.ec/noticias/politica/gobierno-migrantes-ecuatorianos-tps-eeuu>.
- Recchi, Ettore, Emanuel Deutschmann, Lorenzo Gabrielli, and Nodira Kholmatova. 2021. "The Global Visa Cost Divide: How and Why the Price for Travel Permits Varies Worldwide." *Political Geography* 86: 102350. <https://doi.org/10.1016/j.polgeo.2021.102350>.
- Savatic, Filip, Helene Thiollet, Alice Mesnard, Jean-Noel Senne, and Thibaut Jaulin. 2024. "Borders Start with Numbers: How Migration Data Create 'Fake Illegals,'" *International Migration Review*.
- Scheve, Kenneth F., and Matthew J. Slaughter. 2001. "Labor Market Competition and Individual Preferences over Immigration Policy." *The Review of Economics and Statistics* 83 (1): 133–45. <https://doi.org/10.1162/003465301750160108>.
- Schon, Justin, and David Leblang. 2021. "Why Physical Barriers Backfire: How Immigration Enforcement Deters Return and Increases Asylum Applications." *Comparative Political Studies* 54 (14): 2611–52. <https://doi.org/10.1177/00104140211024282>.
- Shachar, Ayelet. 2020. *The Shifting Border: Legal Cartographies of Migration and Mobility*. Manchester, UK: Manchester University Press.
- Sheridan, Mary Beth, and Kevin Sieff. 2023. "Friends or Foes? Biden and Mexico's López Obrador Are Both." *Washington Post*, January. <https://www.washingtonpost.com/world/2023/01/11/biden-lopez-obrador-relations>.
- Sides, John, and Jack Citrin. 2007. "European Opinion about Immigration: The Role of Identities, Interests and Information." *British Journal of Political Science* 37 (3): 477–504. <https://doi.org/10.1017/S0007123407000257>.
- Simmons, Beth A., and Michael R. Kenwick. 2022. "Border Orientation in a Globalizing World." *American Journal of Political Science* 66 (4): 853–70. <https://doi.org/10.1111/ajps.12687>.
- Taladrid, Stephania. 2024. "Will Mexico Decide the u.s. Election?" *The New Yorker*, June. <https://www.newyorker.com/magazine/2024/06/10/will-mexico-decide-the-us-election>.
- Torpey, John. 1998. "Coming and Going: On the State Monopolization of the Legitimate "Means of Movement"." *Sociological Theory* 16 (3): 239–59. <https://doi.org/10.1111/0735-2751.00055>.
- Torpey, John C. 2000. *The Invention of the Passport: Surveillance, Citizenship and the State*. Cambridge, UK: Cambridge University Press. <https://www.cambridge.org/9781108473903>.
- Tsourapas, Gerasimos. 2019. "The Syrian Refugee Crisis and Foreign Policy Decision-Making in Jordan, Lebanon, and Turkey." *Journal of Global Security Studies* 4 (4): 464–81. <https://doi.org/10.1093/jogss/ogz016>.
- Ulmer, Alexandra, Dave Graham, and Matt Spetalnick. 2021. "Mexico Considers Tighter Entry Rules for Venezuelans After US Requests." *Reuters*, November. <https://www.reuters.com/world/americas/exclusive-mexico-considers-tighter-entry-rules-venezuelans-after-us-requests-2021-11-12>.

United States Department of State. 2024a. “Joint Statement on u.s.-Ecuador High-Level Dialogue.” US State Department. <https://www.state.gov/joint-statement-on-us-ecuador-high-level-dialogue>.

———. 2024b. “Promoting Accountability for Nicaraguan Officials.” US State Department. <https://www.state.gov/promoting-accountability-for-nicaraguan-officials>.

———. 2024c. “Visa Restrictions on Executives of Travel Companies Who Facilitate Irregular Migration to the United States.” US State Department. <https://www.state.gov/visa-restrictions-on-executives-of-travel-companies-who-facilitate-irregular-migration-to-the-united-states/>.

United States Department of the Treasury. 2024. “Treasury Targets Transnational Criminal Organization Smuggling Migrants into the United States.” US Treasury. <https://home.treasury.gov/news/press-releases/jy2470>.

Wood, Duncan, and Alexandra Helfgott. 2022. “Seeking Process and Predictability: An Evaluation of u.s.-Mexico Relations Under President Biden.” *Wilson Center*. <https://www.wilsoncenter.org/article/seeking-process-and-predictability-evaluation-us-mexico-relations-under-president-biden>.

Wooldridge, Jeffrey. 2010. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press. <https://mitpress.mit.edu/9780262232586/econometric-analysis-of-cross-section-and-panel-data/>.

World Bank Group. 2022. “Poverty and Shared Prosperity 2022: Correcting Course.” Washington, DC: The World Bank.

Zolberg, Aristide. 1997. “Global Movements, Global Walls: Responses to Migration, 1885-1925.” In *Global History and Migrations*. Boulder, CO: Westview Press.

Supplemental Online Appendix

Deflection and Delay, Not Deterrence: Visa Restrictions and Irregular Migration to the United States

Contents

- A. Study Area
 - B. Control Variables
 - C. Results
 - D. Robustness Checks
-

A. Study Area

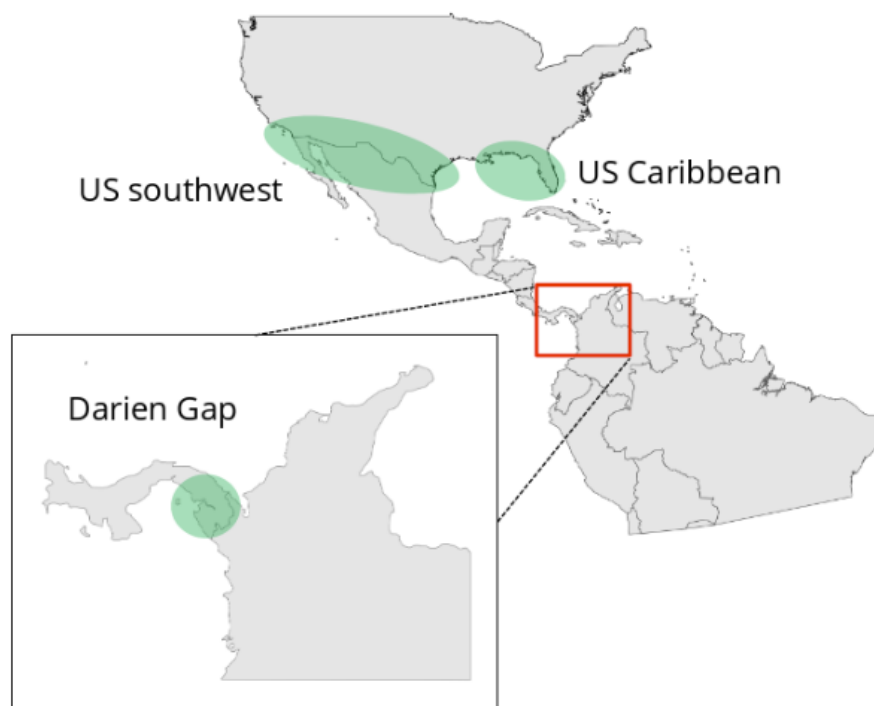


Figure A.1. Study areas. The two destination entry points into the United States (the southwest land border and the Caribbean maritime sector) and the Darién Gap transit corridor.

Figure A.1 highlights the two entry points into the United States and the one transit region — the Darién Gap — where we analyze irregular migrant encounters. The Darién Gap is a largely uninhabited, remote region in southern Panama and northern Colombia, spanning approximately 50,000 square kilometers. Over the course of our study period, the Darién has emerged as a major migration corridor in the Western Hemisphere, with recorded encounters increasing from a post-COVID total of 134,000 in 2021 to 519,000 two years later in 2023, a 288% increase. Table A1 summarizes total annual encounters along the

southern United States (the southwest border and Caribbean sectors combined) and in the Darién Gap.

TABLE A1. Annual encounter totals.

Year	United States — Encounters	United States — YoY %	Darién Gap — Encounters	Darién Gap — YoY %
2019†	18,432		1,574	
2020	157,715	756	9,491	503
2021	1,082,646	586	133,594	1,308
2022	1,537,859	42	248,161	86
2023	1,575,872	3	518,894	109

Note: † Data for 2019 include encounter estimates for December only.

The Darién presents migrants with formidable challenges as they traverse the nearly 100-kilometer overland route from Colombia into developed regions of Panama. Characterized by dramatic elevation changes, dense forest cover, and fast-flowing rivers, the crossing would be difficult even for experienced backcountry hikers. Reports suggest that in the first quarter of 2023 over 100 migrants died attempting the crossing (Pappier and Yates 2023), which takes an average of 5 to 15 days (Mohor 2024). Beyond natural hazards, migrants face violence including sexual abuse by criminal organizations operating in the area (Mohor 2024; HRW 2023). Relative to other pathways, the Darién represents a route of desperation rather than opportunity.

B. Control Variables

In addition to unit and time fixed effects, all empirical models include a basket of control variables in both the selection and outcome equations to account for drivers of irregular migration that past research suggests “push” individuals and families to leave their countries of origin. We include indicators for armed conflict, climate change, socio-economic structure, and the post-COVID period, following the easing of lockdown-related travel restrictions.

Because violence related to civil war, sectarian conflict, or cartel activity drives migration, we include a population-normalized measure of conflict fatalities in the origin country from the ACLED Armed Conflict Database (Raleigh et al. 2010), operationalized as the log of total conflict fatalities per million residents. Natural disasters and extreme weather may also shape flows; the EM-DAT international disasters database (EM-DAT 2023) provides total disaster-attributable fatalities, and we code a binary indicator for any country experiencing an above-average number of weather- or natural-disaster fatalities in a given year-month. We add two climate indicators: 40-year mean-deviated wet-bulb temperature (Copernicus Climate Change Service 2017) and the TerraClimate Palmer Drought Severity Index (Abatzoglou et al. 2018), each capturing deviations from the long-run trend rather than one-off seasonal variation. We include the origin-country population dependency ratio (US

Census Bureau 2023) and the monthly US unemployment rate (US Bureau of Labor Statistics 2024) as proxies for economic push and pull factors. To account for pandemic-era policy, we include a post-COVID indicator coded 1 for months after November 2020 (US DHS 2020). Finally, we include the monthly number of beneficiaries of the CHNV parole program for Cubans, Haitians, Nicaraguans, and Venezuelans (US DHS 2024), which began in October 2022. Table A2 reports descriptive statistics for all control variables.

TABLE A2. Descriptive statistics — control variables.

Variable	Obs	Mean	SD	Min	Max
Dependency ratio	7,644	58.50	16.30	16.40	114.00
US unemp. rate	7,644	5.14	2.54	3.40	14.80
ACLED†	7,644	4.75	8.74	-7.25	23.00
Natural disaster	7,644	0.01	0.10	0	1
Wet bulb dev.	7,644	0.37	0.91	-4.14	6.57
Palmer drought dev.	7,644	-0.65	2.83	-8.91	13.30
Post-COVID	7,644	0.78	0.42	0	1
CHNV Parole	7,644	53.12	704.72	0	15,720

Note: † denotes logged variable.

C. Results

The following section provides complete tables of results that include parameters and standard errors for all control variables. Table A3 contains parameter estimates for the outcome equations (irregular-migrant encounter counts) used to test H1a and H1b — the Deterrence Hypotheses — as well as H2, Spatial Deflection, while Table A4 contains parameters for the corresponding selection equations. Tables A5 and A6 contain the equivalent parameters for the Temporal Deflection (H3) and Enforcement Capacity (H4) hypotheses. Estimates on the “Restrict” parameters in Table A3 are identical to those presented in the main text in **Table 4**. The visa-restriction-duration parameter estimates in Table A5 were used to produce **Figures 4, 5, and 6** as well as the conditional-effect estimates in **Tables 6 and 7** of the main text.

TABLE A3. Travel visa restriction results — Outcome equations

Dependent variable: Irregular encounters

	US southwest (SW)	US Caribbean (CR)	Darién Gap (DA)
Restrict – Caribbean	2.696** (1.067)	-1.641 (1.022)	0.466 (0.774)
Restrict – Mexico	-0.433**	0.101	0.442

	US southwest (SW)	US Caribbean (CR)	Darién Gap (DA)
	(0.177)	(0.210)	(0.432)
Restrict – Central America	1.707**	–2.449*	2.958**
	(0.582)	(1.397)	(0.961)
Restrict – South America	–1.477**	0.397*	–1.716**
	(0.299)	(0.212)	(0.537)
P β restrict	2.493**	–3.592**	2.150*
	(1.103)	(0.781)	(1.261)
Irregular encounters_{t-1}	0.00008**	0.003**	0.00008*
	(0.00002)	(0.0008)	(0.00004)
Dependency ratio	0.064	0.138	–0.027
	(0.107)	(0.100)	(0.128)
US unemp. rate	–0.158**	–0.0594**	–0.268**
	(0.021)	(0.0156)	(0.050)
ACLED	0.015	0.062	0.039
	(0.040)	(0.073)	(0.108)
ACLED ²	–0.0004	0.032	0.011
	(0.0127)	(0.022)	(0.028)
Natural disaster	–0.331	1.256**	–0.193
	(0.286)	(0.134)	(0.146)
Wet bulb deviation	0.005	–0.108**	0.060
	(0.030)	(0.043)	(0.043)
Palmer drought deviation	–0.002	–0.029*	–0.003
	(0.021)	(0.016)	(0.034)
Post-COVID	0.883**	0.457	1.125**
	(0.220)	(0.306)	(0.266)
CHNV Parole	0.000009	–0.00002	–0.00006
	(0.00005)	(0.00003)	(0.00006)
Intercept	–6.758	–4.451	0.923
	(7.795)	(6.729)	(9.676)
Unit and time fixed effects	Yes	Yes	Yes
Obs.	7644	7644	7644
Log likelihood	–14239	–2185	–9949
McFadden’s pseudo-R ²	0.193	0.302	0.209

TABLE A4. Travel visa restriction results — Selection equations*Dependent variable: Irregular encounters*

	US southwest (SW)	US Caribbean (CR)	Darién Gap (DA)
Dependency ratio	0.023** (0.005)	0.0190 (0.0140)	0.027** (0.007)
US unemp. rate	0.050** (0.009)	0.029* (0.015)	-0.133** (0.015)
ACLEd	-0.130** (0.039)	-0.121** (0.059)	-0.119** (0.050)
ACLEd ²	0.027** (0.013)	0.001 (0.019)	0.032** (0.013)
Natural disaster	0.613** (0.188)	0.489** (0.224)	-0.072 (0.192)
Wet bulb deviation	-0.060** (0.023)	0.133** (0.057)	-0.062* (0.032)
Palmer drought deviation	-0.035** (0.016)	0.023 (0.031)	-0.035 (0.025)
Post-COVID	0.201** (0.069)	-0.687** (0.107)	0.571** (0.085)
Intercept	-3.090** (0.344)	-2.858** (0.760)	-3.511** (0.471)
Region fixed effects	Yes	Yes	Yes
Obs.	7644	7644	7644
Log likelihood	-14239	-2185	-9949
McFadden's pseudo-R ²	0.193	0.302	0.209

TABLE A5. Travel visa duration results — Outcome equations*Dependent variable: Irregular encounters*

	H3 – Temporal Deflection: US	H3 – Temporal Deflection: Darién	H4 – Enforcement Capacity: Partial	H4 – Enforcement Capacity: Full
Duration_SA	-0.089** (0.037)	0.041 (0.043)	-0.067** (0.031)	-0.070** (0.031)
Duration ² _SA	0.0037** (0.0026)	-0.0067* (0.0035)	0.004** (0.002)	0.004** (0.002)

	H3 – Temporal Deflection: US	H3 – Temporal Deflection: Darién	H4 – Enforcement Capacity: Partial	H4 – Enforcement Capacity: Full
Duration_CA,CR	-0.044** (0.022)	-0.036 (0.035)	-0.026 (0.017)	-0.011 (0.024)
Duration ² _CA,CR	0.002** (0.0006)	0.002 (0.001)	0.0015** (0.0005)	0.001 (0.0007)
Duration_CA,CR × Darién Encounters†			-0.0035** (0.0014)	-0.0092** (0.0045)
Duration ² _CA,CR × Darién Encounters†				0.0002 (0.0001)
Darién Encounters†			0.325** (0.058)	0.332** (0.058)
Irregular encounters_{t-1}	0.00005* (0.00002)	0.00014** (0.00003)	0.00004** (0.00002)	0.00004** (0.00002)
Dependency ratio	0.074 (0.103)	-0.073 (0.122)	0.070 (0.095)	0.065 (0.097)
US unemp. rate	-0.140** (0.020)	-0.354** (0.061)	-0.096** (0.022)	-0.100** (0.022)
ACLED	0.024 (0.039)	-0.005 (0.114)	0.047 (0.033)	0.049 (0.033)
ACLED ²	-0.006 (0.014)	0.003 (0.028)	-0.005 (0.013)	-0.005 (0.013)
Natural disaster	-0.275 (0.254)	-0.205 (0.134)	-0.356 (0.224)	-0.346 (0.221)
Wet bulb deviation	0.018 (0.030)	0.083* (0.044)	0.0003 (0.027)	0.003 (0.028)
Palmer drought deviation	0.001 (0.021)	0.007 (0.034)	0.029 (0.018)	0.030* (0.018)
Post-COVID	0.954** (0.207)	1.403** (0.282)	0.622** (0.210)	0.615** (0.214)
CHNV Parole	0.00005 (0.00005)	-0.00006 (0.00007)	0.00001 (0.00003)	0.000008 (0.00003)
Intercept	-3.496 (7.848)	9.258 (9.286)	-3.610 (7.156)	-3.259 (7.334)
Unit and time fixed effects	Yes	Yes	Yes	Yes
Obs.	7693	7301	7693	7693

Note: † Darién encounters lagged by two months and logged.

TABLE A6. Travel visa duration results — Selection equations

	H3 – Temporal Deflection: US	H3 – Temporal Deflection: Darién	H4 – Enforcement Capacity: Partial	H4 – Enforcement Capacity: Full
Dependency ratio	0.022** (0.005)	0.027** (0.007)	0.022** (0.005)	0.022** (0.005)
US unemp. rate	0.051** (0.009)	-0.133** (0.015)	0.051** (0.009)	0.051** (0.009)
ACLED	-0.131** (0.039)	-0.119** (0.050)	-0.131** (0.039)	-0.131** (0.039)
ACLED ²	0.025** (0.013)	0.032** (0.013)	0.025* (0.013)	0.025* (0.013)
Natural disaster	0.589** (0.185)	-0.072 (0.192)	0.589** (0.185)	0.589** (0.185)
Wet bulb deviation	-0.057** (0.022)	-0.062** (0.032)	-0.057** (0.022)	-0.057** (0.022)
Palmer drought deviation	-0.036** (0.016)	-0.035 (0.025)	-0.036** (0.016)	-0.036** (0.016)
Post-COVID	0.073 (0.069)	0.571** (0.085)	0.073 (0.069)	0.073 (0.069)
Intercept	-2.870** (0.339)	-3.511** (0.471)	-2.870** (0.339)	-2.870** (0.339)
Region fixed effects	Yes	Yes	Yes	Yes
Obs.	7693	7301	7693	7693

Note: † Darién encounters lagged by two months and logged.

D. Robustness Checks

Robustness to enforcement bundle and post-pandemic confounders

Our visa shocks fall in a period crowded with other policy changes: the CHNV parole program (Venezuela October 2022; Cuba, Haiti, and Nicaragua January 2023), the Title 42 expulsion authority (in force ~March 2020 to its expiry on 11 May 2023), and a secular post-pandemic surge in encounters. Because most visa restrictions land during the recovery, “months since restriction” is mechanically correlated with the surge, and a skeptic could read post-restriction movement as the recovery rather than the policy. We address this in three ways.

First, adding a Title 42 indicator (with CHNV parole counts already in the control bundle) to both equations for each corridor’s hurdle leaves the four transit-region visa coefficients stable in sign, magnitude, and significance across all routes (Table A7, columns 1–2). Second, re-estimating each corridor with PPML and origin and calendar-month fixed effects (Table A7, column 3) differences out shocks common to all origins in a month — the post-pandemic surge, the Title 42 regime and its expiry, and any nationwide enforcement change — so the visa coefficients are identified only from within-origin, within-month variation. Even in this specification, our hypotheses survive: the Mexico deterrent on the southwest border (-0.370 , $p \approx 0.01$) and the South-America-to-Darién channel (-3.870 , $p < 0.001$), with the southwest Central America deflection also surviving ($+1.441$, $p \approx 0.02$). Third, a placebo restriction dated six months before the earliest CHNV start leaves the four southwest coefficients correctly signed and significant (CR $+2.75$, ME -0.47 , CA $+1.73$, SA -1.01), though it is a weak placebo because 2022 was a genuine inflection in encounter trends, so we present it as corroborating rather than decisive.

TABLE A7. Visa coefficients under enforcement-bundle controls and two-way fixed effects.

Route	Visa measure	Baseline hurdle	+ Title 42	PPML (origin + month FE)
Southwest	Caribbean	2.696 (0.465)	3.258 (0.499)	0.513 (0.910) ns
	Mexico	-0.433 (0.094)	-0.441 (0.094)	-0.370 (0.148)
	Central America	1.707 (0.400)	1.601 (0.401)	1.441 (0.602)
	South America	-1.477 (0.126)	-1.458 (0.126)	0.110 (0.421) ns
Caribbean	Caribbean	-1.641 (0.696)	-1.861 (0.771)	-2.088 (1.791) ns
	Mexico	0.101 (0.134) ns	0.101 (0.134) ns	-0.505 (0.390) ns
	Central America	-2.449 (0.490)	-2.417 (0.492)	-2.602 (1.864)
	South America	0.397 (0.192)	0.395 (0.192)	-0.011 (0.322) ns
Darién	Caribbean	0.466 (0.390) ns	2.062 (0.469)	4.114 (2.544) ns

Route	Visa measure	Baseline hurdle	+ Title 42	PPML (origin + month FE)
	Mexico	0.442 (0.109)	0.430 (0.108)	0.411 (0.493) ns
	Central America	2.958 (0.473)	2.758 (0.470)	0.850 (0.782) ns
	South America	-1.716 (0.218)	-1.743 (0.216)	-3.870 (0.911)

Standard errors in parentheses; “ns” = not significant at 10%. PPML fit: southwest pseudo- R^2 = 0.942 (N = 6,370), Caribbean = 0.909 (N = 2,499), Darién = 0.949 (N = 4,186).

On the selection stage: the original specification contains no selection-only variable, so identification of the conditional count rests on functional form and the differing fixed-effects structure across the two stages. Imposing three plausible selection-only shifters — geographic proximity to the overland route, distance to the United States, and a structural indicator of whether an origin’s nationals are ever encountered on a corridor — leaves the count-equation visa coefficients numerically unchanged to four decimal places where they converge (the southwest South America coefficient is -1.47694 with no restriction and -1.47694 with the proximity restriction). The conclusions are therefore not an artifact of the missing exclusion restriction.

Estimator comparison

For each corridor we estimate, side by side, the exponential hurdle (the main specification), PPML with origin and month fixed effects, and a zero-inflated negative binomial (with a zero-inflated Poisson fallback where ZINB failed to converge). The Central America visa coefficient — the cleanest deflection signal — keeps the spatial-deflection signature across the hurdle and PPML and is significant throughout (Table A8), with the positive Darién sign surviving even into the zero-inflated model. The South America and Mexico measures are directionally stable across the hurdle and PPML and attenuate under the zero-inflated specifications. We retain the hurdle as the main specification because it delivers the sharpest estimates of the coefficients the theory concerns and models the two margins explicitly, and because ZINB exhibited convergence fragility on the sparse routes.

TABLE A8. Estimator comparison: visa coefficients by corridor.

Route	Visa measure	Hurdle	PPML	ZINB/ZI P
SW	Caribbean	2.696***	-0.438	0.280
	Mexico	-0.433***	-0.300**	0.366**
	Central America	1.707*	1.179	-0.116
	South America	-1.477***	-0.284	-0.335
CR	Caribbean	-1.641**	-0.341	0.165

Route	Visa measure	Hurdle	PPML	ZINB/ZI P
DA	Central America	-2.449*	-2.628*	-0.361
	South America	0.397**	-0.259	1.693***
	Mexico	0.442***	0.360	-0.027
	Central America	2.958*	1.812	1.410*
	South America	-1.716***	-2.125*	-0.239

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

We report fit statistics appropriate to maximum-likelihood and PPML models in place of an adjusted R^2 (Table A9); these are comparable only within an estimator family, not across rows.

TABLE A9. Fit statistics by estimator and corridor.

Route	Estimator	Log-lik	AIC	Pseudo- R^2	N
SW	Hurdle	-14,239.3	28,824.6	0.156	7,644
SW	PPML	-883,673.7	1,767,379.3	0.930	6,370
SW	ZIP	-1,933,756.0	3,867,610.1	0.772	7,644
CR	Hurdle	-2,185.0	4,558.0	0.118	7,644
CR	PPML	-5,342.0	10,716.0	0.879	2,499
CR	ZINB	-2,496.9	5,093.9	0.306	7,644
DA	Hurdle	-9,949.3	20,164.6	0.120	7,301
DA	PPML	-246,975.5	493,981.0	0.927	4,459
DA	ZINB	-12,066.8	24,231.6	0.167	7,301

Alternative coding and fixed-effects robustness

Table A10 reports four further checks on the southwest-route results; the deflection sign pattern is preserved throughout.

TABLE A10. Alternative coding and fixed effects (southwest border unless noted).

Check	Caribbean	Mexico	Central America	South America
Continuous (main)	2.696***	-0.433***	1.707***	-1.477***
Binary (visa-free vs. any)	0.472 ns	-0.441**	0.227 ns	-0.763***

Check	Caribbean	Mexico	Central America	South America
Ordinal indicators	+0.32 → +0.78 (monotone)	(level-2 -)	+1.02 → +2.93 (monotone)	-0.41 → -0.59 (monotone)
Region × month FE (PPML)	0.840 ns	-0.326**	1.247**	-0.103 ns
Lag excluded	sign unchanged***	sign unchanged***	sign unchanged***	sign unchanged***
Mexico × Central America interaction	—	-0.299** (main effect)	+2.406*** (main effect)	—

Interaction term (Mexico × Central America) is not significant on the southwest (-0.242, $p^ = 0.155$) or Darién (+0.166, $p = 0.395$) routes, indicating combined restriction is statistically indistinguishable from additive. Binary coding collapses the dose to on/off, which discards the intensity variation identifying the positive (deflection) channels; the negative (deterrence) channels survive. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*

Event study around discrete visa shocks

To visualize deflection in event time, we trace encounters on the three corridors around three precisely dated shocks. For each shock and route, we estimate a **stacked two-way (origin and event-time) fixed-effects event study with on $\ln(\text{encounters} + 1)$** : origin fixed effects, common event-time dummies identified off a never-treated donor pool (non-OECD origins with no change in the relevant transit-region measure), event time from six months before to twelve months after the shock with month -1 omitted and endpoints binned, standard errors clustered on origin, and 90% confidence intervals. The β coefficients are the treated origin's deviation from the donor counterfactual. We do not absorb full calendar-month fixed effects because, with a single treated unit per month, they are collinear with the treatment.

Figure A.2 (Venezuela) is the clean demonstration of spatial deflection: southwest-border encounters jump and stay elevated while Darién-Gap crossings climb steadily from roughly the fourth month, tracing flow from the closed air route onto the overland corridor. Figure A.3 (Cuba) shows the mirror image of a loosening — the southwest and Caribbean routes rise after Nicaragua's air bridge opens, while the Darién turns slightly negative, which rules out a mechanical “any shock raises every route” reading. Figure A.4 (the September 2023 Central American wave) shows small, mostly flat deviations across a thirteen-origin, low-volume average with only three post-shock months in the panel, so we read it as inconclusive rather than as evidence against deflection.

Figure A.2. Event study — Venezuela: Mexico visa requirement (Jan 2022, tightening)
 Stacked two-way (origin + event-time) FE event study estimated with reghdfe on $\ln(\text{encounters}+1)$;
 treated-origin deviation from a never-treated donor pool, 90% CI; month -1 = reference.

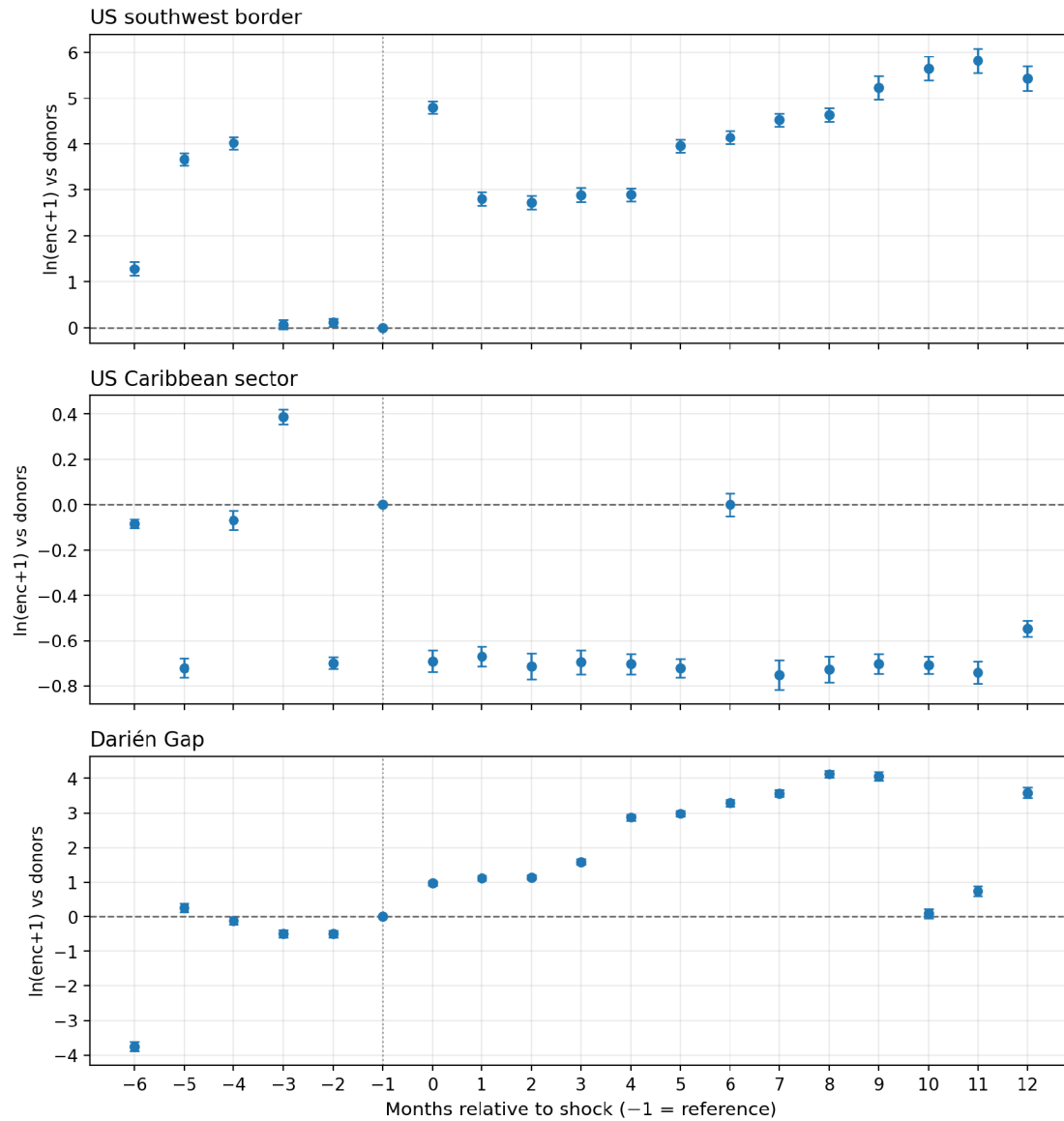


Figure A.2. Event study — Venezuela (Mexico visa requirement, January 2022, tightening).

Figure A.3. Event study — Cuba: Nicaragua dropped visa (Dec 2021, loosening)
 Stacked two-way (origin + event-time) FE event study estimated with reghdfe on $\ln(\text{encounters}+1)$;
 treated-origin deviation from a never-treated donor pool, 90% CI; month -1 = reference.

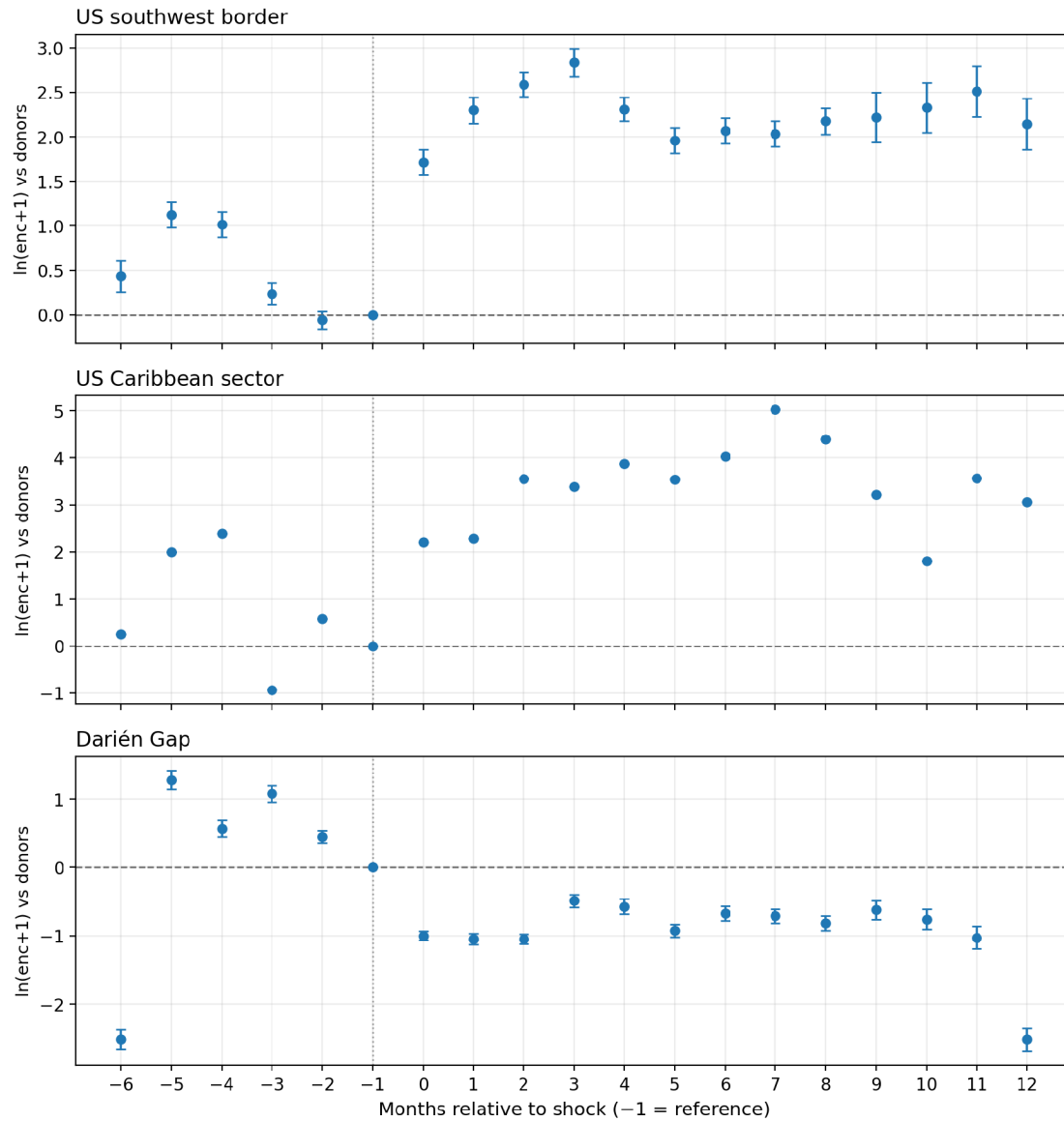


Figure A.3. Event study — Cuba (Nicaragua dropped its visa on Cubans, December 2021, loosening).

Figure A.4. Event study — Central America restriction wave (Sep 2023, 13-origin average)
 Stacked two-way (origin + event-time) FE event study estimated with reghdfe on $\ln(\text{encounters}+1)$;
 treated-origin deviation from a never-treated donor pool, 90% CI; month -1 = reference.

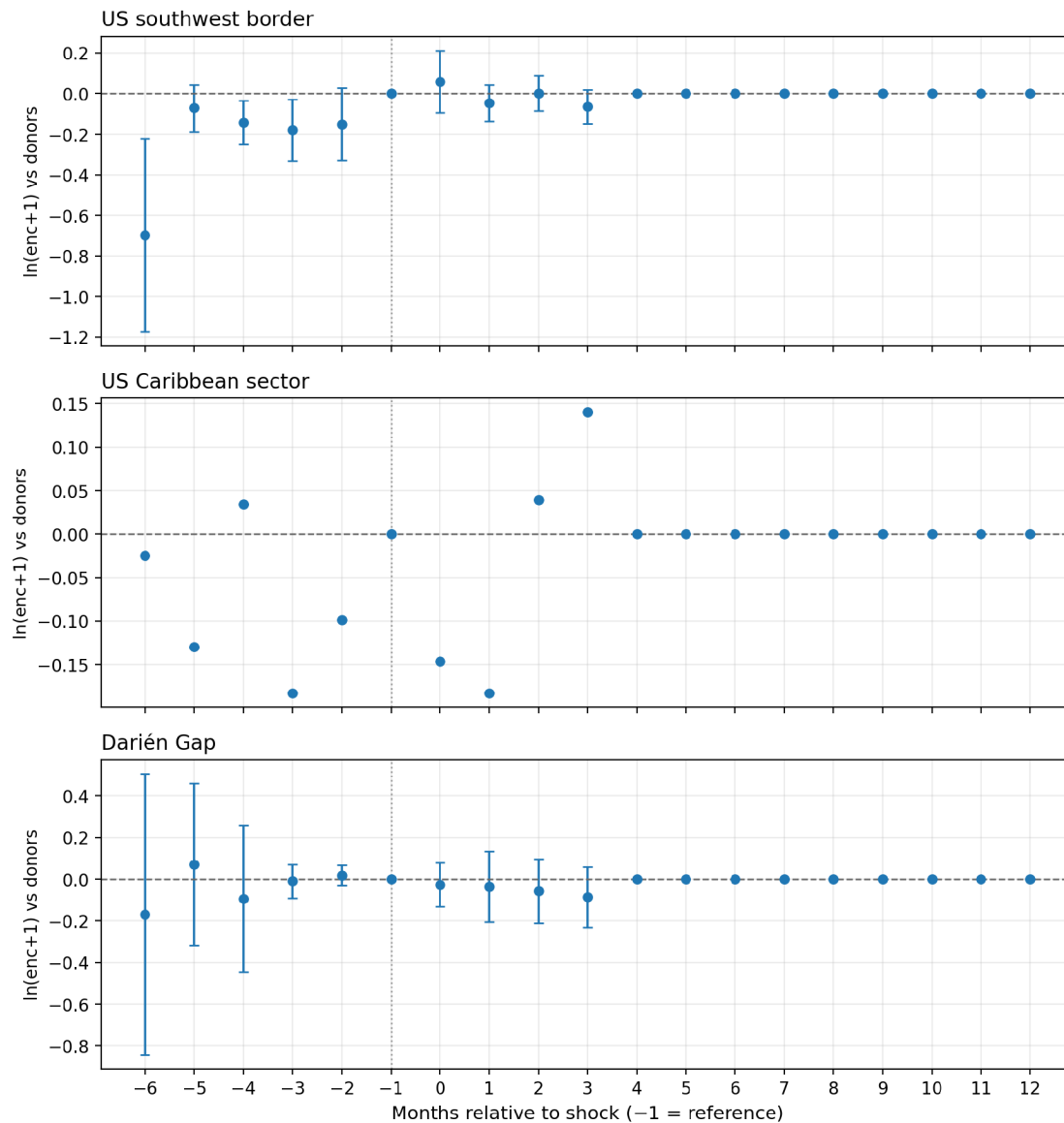


Figure A.4. Event study — Central American restriction wave (September 2023, thirteen-origin average).

Within-origin identifying variation

The within-origin variation that identifies the panel estimates under origin and month fixed effects is concentrated in particular origins and moments. Figure A.5 plots, for each transit region, the cumulative number of non-OECD origin countries that have experienced a tightening of visa access over the study window. The Caribbean and South American

measures move for nearly all origins (159 and 164 of 164), with most of that movement occurring in the 2020 pandemic wave; the Central American measure tightens for thirty origins, stepping up visibly at the September 2023 wave; and the Mexico measure changes for only three origins, essentially the January 2022 Venezuela episode. The Mexico channel is therefore identified off few origins, which is why we corroborate it with the event study above rather than relying on the panel coefficient alone.

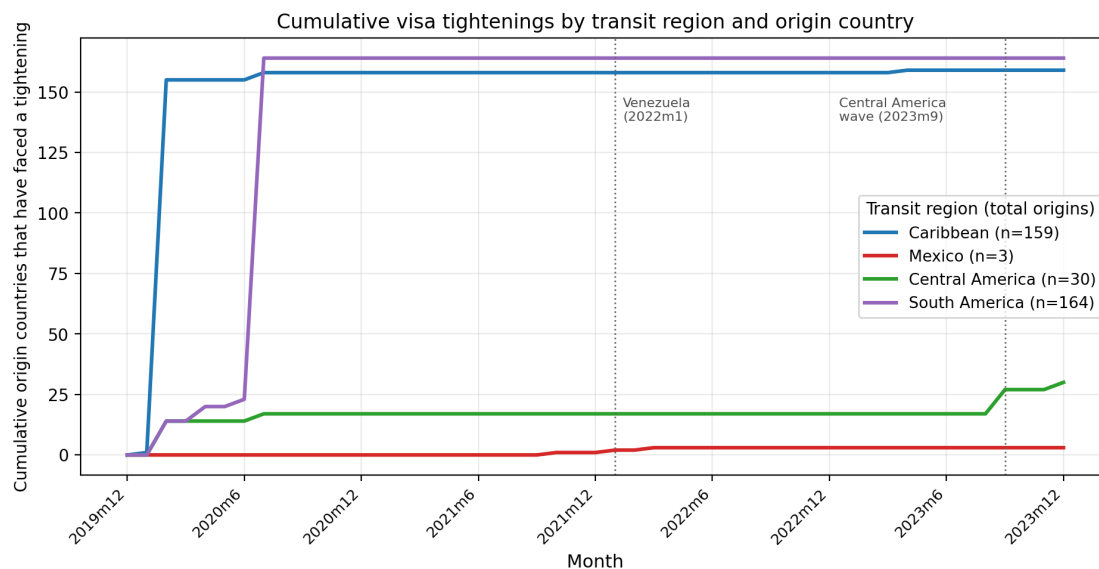


Figure A.5. Cumulative number of non-OECD origin countries that have faced a tightening of visa access in each transit region, 2019m12–2023m12. Vertical lines mark the January 2022 Venezuela episode (Mexico) and the September 2023 Central American wave.

References

- Abatzoglou, John T., Solomon Z. Dobrowski, Sean A. Parks, and Katherine C. Hegewisch. 2018. “TerraClimate, a high-resolution global dataset of monthly climate and climatic water balance from 1958–2015.” *Scientific Data* 5 (1): 1–12.
- Copernicus Climate Change Service (C3S). 2017. “ERA5: Fifth generation of ECMWF atmospheric reanalysis of the global climate.” *Copernicus Climate Change Service Data Store (CDS)*, accessed March 20, 2024. <https://cds.climate.copernicus.eu/cdsapp#!/home>.
- EM-DAT. 2023. *EM-DAT: The international disaster database*, June. www.emdat.be.
- HRW. 2023. ““This Hell Was My Only Option”: Abuses Against Migrants and Asylum Seekers Pushed to Cross the Darién Gap.” *Human Rights Watch* (November). <https://www.hrw.org/report/2023/11/09/hell-was-my-only-option/abuses-against-migrants-and-asylum-seekers-pushed-cross>.

Mohor, Daniela. 2024. "The Darién Gap migration crisis in six graphs, and one map." *The New Humanitarian* (January). <https://www.thenewhumanitarian.org/maps-and-graphics/2024/01/15/darien-gap-migration-crisis-six-graphs-and-one-map>.

Pappier, Juan, and Caitlyn Yates. 2023. "How the Treacherous Darien Gap Became a Migration Crossroads of the Americas." *Migration Policy Institute's Migration Information Source* (October). <https://www.hrw.org/news/2023/10/10/how-treacherous-darien-gap-became-migration-crossroads-americas>.

Raleigh, Clionadh, Andrew Linke, Håvard Hegre, and Joakim Karlsen. 2010. "Introducing ACLED: An armed conflict location and event dataset." *Journal of Peace Research* 47 (5): 651–660.

US Bureau of Labor Statistics. 2024. "Unemployment Rate [UNRATE], retrieved from FRED, Federal Reserve Bank of St. Louis." *Federal Reserve Bank of St. Louis*, accessed May 1, 2024. <https://fred.stlouisfed.org/series/UNRATE>.

US Census Bureau. 2023. *US Census Bureau International Database*, June. <https://www.census.gov/data-tools/demo/idb>.

US DHS. 2020. *DHS measures on the border to limit the further spread of coronavirus*, October. <https://www.dhs.gov/news/2020/10/19/fact-sheet-dhs-measures-border-limit-further-spread-coronavirus>.

US DHS. 2024. *Processes for Cubans, Haitians, Nicaraguans, and Venezuelans*. Accessed May 1, 2024. <https://ohss.dhs.gov/topics/immigration/immigration-enforcement/immigration-enforcement-and-legal-processes-monthly>.