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Global Migration and Settlement Policies

Edited by William Abur



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Meet the editor



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Preface

The phenomenon of global migration and settlement has become one of the defining features of the 21st century. Driven by a complex interplay of economic, political, social, and environmental factors, migration has significantly reshaped demographics, economies, and cultural landscapes worldwide. This book, *Global Migration and Settlement Policies*, aims to provide a comprehensive exploration of the policies that nations have adopted to manage these dynamic processes, shedding light on their motivations, implementations, successes, and challenges.

Migration is not a new phenomenon; it has been an integral part of human history. However, recent decades have witnessed unprecedented levels of movement facilitated by advances in transportation, communication, and global interconnectedness. At the same time, the scale and scope of migration have raised critical questions about sovereignty, security, integration, human rights, and development. Governments and international organizations have responded with a variety of policies—ranging from open-door approaches to strict border controls—reflecting diverse ideological, economic, and cultural priorities.

This book aims to analyze these policies within a global framework, emphasizing the importance of understanding local contexts while considering international influences. It explores the motivations behind migration policies, their design and implementation, and their impacts on migrants and host societies. Through a multidisciplinary lens, incorporating political science, sociology, economics, and international law, the chapters examine issues such as refugee protection, economic migration, integration strategies, and the securitization of borders.

One of the central themes of this volume is the tension between national sovereignty and international cooperation. As migration becomes increasingly transnational, unilateral policies often prove insufficient or counterproductive. The book highlights the efforts of regional bodies, such as the European Union, and international organizations, like the United Nations, to foster coordinated approaches that uphold human rights while addressing security and economic concerns.

Another critical aspect addressed is the human dimension of migration. Behind the policies are millions of individuals seeking safety, opportunity, or reunion with loved ones. Their experiences illuminate the profound human impact of policy choices and underscore the importance of humane, equitable, and sustainable migration management. This book advocates for policies grounded in respect for human dignity and rights, emphasizing the importance of evidence-based decision-making.

The compilation of chapters in this volume is the result of collaborative efforts among scholars, policymakers, and practitioners from diverse regions and backgrounds. Their insights aim to foster a nuanced understanding of the complexities involved in shaping migration and settlement policies in an increasingly interconnected world.

We hope that this book will serve as a valuable resource for students, researchers, policymakers, and advocates committed to understanding and addressing the global challenges of migration.

As the world continues to evolve, so too must our approaches to migration. This volume aspires to contribute to ongoing debates and inspire innovative, compassionate, and effective policies that respect human rights, promote social cohesion, and harness the potential of migration for global development.

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Chapter 1

Introductory Chapter: Migration and Settlement Policy in Australia

William Abur

1. Introduction

Australia's history and development have been profoundly shaped by its migration and settlement policies. As a nation built largely through immigration, Australia's approach to migration has evolved over time, reflecting changing economic needs, social attitudes, and geopolitical considerations. This chapter explores the historical development of Australia's migration policies, their key features, and contemporary issues surrounding settlement and multiculturalism. The chapter serves as a foundational exploration of migration trends and policy issues in Australia, setting the stage for a deeper examination of specific challenges and dynamics in subsequent chapters.

Migration has emerged as one of the defining characteristics of our globalized world, affecting economies, societies, and political landscapes. As people move across borders in search of better opportunities, safety, and quality of life, the complexities surrounding migration and settlement policies have become increasingly prominent. In Australia, a nation built on waves of migration, these issues are particularly acute [1–4].

2. Understanding migration and its context

Australia's history and development have been profoundly shaped by its migration and settlement policies. As a nation built largely through immigration, Australia's approach to migration has evolved over time, reflecting changing economic needs, social attitudes, and geopolitical considerations. This essay explores the historical development of Australia's migration policies, their key features, and contemporary issues surrounding settlement and multiculturalism [5–7].

At its core, migration refers to the movement of people from one place to another, often across national boundaries. This phenomenon can be driven by various factors, including economic opportunities, social networks, and political conditions [5–7]. In Australia, migration has been a crucial element of nation-building since the first settlers arrived. The nation's identity has been shaped by diverse waves of migrants, each contributing to the social fabric and economic dynamism of the country [1, 3, 4].

In recent decades, Australia has seen a significant increase in both skilled and unskilled migration. The country's immigration policy has evolved in response to global labor demands, humanitarian crises, and domestic needs. The debate surrounding migration is not merely about numbers; it encompasses issues of human rights, cultural integration, social cohesion, and economic sustainability [1, 3, 4].

3. The historical landscape of migration in Australia

Understanding contemporary migration policies requires a historical perspective. Australia's immigration history can be divided into several key phases, each marked by distinctive policies and societal attitudes [1, 3]. The White Australia Policy, in place from 1901 to the mid-twentieth century, exemplified an era of exclusion that shaped public perceptions of race and nationality. This policy was dismantled in the 1970s, leading to a more multicultural approach that recognized the contributions of various immigrant groups [5–7].

The post-war period marked a significant shift, as Australia began to actively recruit migrants to facilitate economic growth. The introduction of the points-based immigration system in the 1990s further diversified the migrant population, prioritizing skilled workers while also acknowledging humanitarian needs. This evolving landscape reflects broader global trends and highlights the intricate relationship between migration and national identity [3, 4].

Australia's European settlement began in 1788 with the arrival of the First Fleet, which predominantly consisted of British convicts. During the nineteenth century, free settlers arrived, largely from the United Kingdom and Ireland, seeking economic opportunities [1, 3, 4]. The colonial governments encouraged migration to support agricultural development and economic growth. However, migration during this period was largely restricted to Europeans, reflecting the racial attitudes of the time [2, 8].

4. Post-world war II migration boom

After World War II, Australia faced labor shortages and sought to boost its population. The government launched a significant migration program, welcoming Europeans through the Migration Act 1958 and the “Populate or Perish” policy. The aim was to secure Australia's economic recovery and defense needs amid Cold War tensions. The post-war migration wave included many Europeans, particularly from Italy, Greece, Germany, and the Netherlands, contributing to a more multicultural society [2].

5. Policies of the late twentieth century

The 1970s saw a shift toward more inclusive and non-discriminatory migration policies. The abolition of the White Australia Policy in 1973 marked a significant turning point, emphasizing the importance of multiculturalism and non-discrimination [5–7]. The focus moved from racially selective migration to skills-based and family reunion policies, broadening Australia's intake to include diverse nationalities and cultures [2, 8].

6. Contemporary migration trends

Australia's immigration patterns have been influenced by global events, including economic downturns, conflicts, and climate change. Recent years have seen an influx of refugees and asylum seekers from conflict zones, raising questions about the nation's humanitarian obligations and the effectiveness of its settlement policies. The COVID-19 pandemic further complicated migration dynamics, resulting in border closures and the re-evaluation of immigration policies.

Additionally, there is a growing recognition of the role of temporary migration, particularly in sectors such as agriculture, hospitality, and healthcare. This trend raises critical issues regarding workers' rights, integration, and the long-term impacts on communities [3, 4]. As Australia grapples with these contemporary challenges, the need for coherent and inclusive migration policies becomes increasingly urgent.

7. Policy frameworks and settlement issues

The formulation of migration policies in Australia involves a complex interplay of governmental and non-governmental actors. Federal and state governments each play a role in shaping policies that impact migrants' lives, including visa regulations, social services, and integration programs [2, 8]. However, the effectiveness of these policies often hinges on their implementation at the local level.

Settlement policies are particularly crucial for ensuring that migrants can thrive in their new environments. Access to employment, education, healthcare, and social networks are vital for successful integration [2, 8]. Yet, many migrants face barriers that hinder their ability to settle and contribute fully to Australian society. Issues such as discrimination, lack of recognition of qualifications, and limited access to resources exacerbate these challenges [2, 8].

8. Skilled migration program

One of the cornerstones of the current immigration policy is the skilled migration program. This program aims to attract individuals with the qualifications and experience needed in the Australian economy. The General Skilled Migration (GSM) program includes visas such as the Skilled Independent Visa (subclass 189), Employer Nomination Scheme (subclass 186), and State-nominated visas. Applicants are assessed based on factors like age, education, work experience, and English language proficiency.

9. Family and partner migration

Family reunification is another significant component of Australia's migration policy. Australian citizens and permanent residents can sponsor family members, including spouses, children, and parents, to join them. The Partner Visa (subclass 820/801) allows partners to live and work in Australia while their application is processed. These policies emphasize maintaining strong family connections and social cohesion [3, 4].

10. Humanitarian and refugee intake

Australia's humanitarian program reflects its commitment to providing asylum and resettling refugees. The Migration Act 1958 establishes the legal framework for refugee protection. Australia accepts a set number of refugees annually through offshore resettlement and onshore protection visas [8]. The country has historically prioritized certain regions but has also faced criticism for its handling of asylum seekers arriving by boat, leading to policies such as mandatory detention and offshore processing.

11. Temporary visas and work programs

Temporary visas, including student visas, working holiday visas, and temporary skill shortage visas, facilitate mobility and address specific labor market needs [5–7]. The Working Holiday Maker program enables young people from eligible countries to work and travel in Australia for up to a year (or longer in some cases). These temporary arrangements often serve as pathways to permanent residency.

12. Refugees settlement and racism in Australia

Australia has a long history of immigration and multiculturalism, shaped significantly by its policies on refugees and asylum seekers. The country's approach to refugee settlement has evolved over the decades, reflecting broader societal attitudes toward diversity and inclusion. However, alongside this development, issues of racism and xenophobia persist, impacting the experiences of refugees and migrants [2, 8].

Australia is known for its generous refugee intake and its commitment to providing safety for those fleeing persecution, war, and hardship. The country operates various programs, including offshore processing centers and onshore visa pathways, aimed at resettling refugees. Major humanitarian programs, such as the Refugee and Humanitarian Program, aim to resettle thousands of refugees annually from regions like the Middle East, Africa, and Southeast Asia [2, 8].

Once refugees arrive in Australia, they often face a complex journey of integration. Settlement services play a crucial role in helping refugees adapt to their new environment. These services include language training, employment assistance, housing support, and community engagement programs. Despite these efforts, refugees often encounter significant barriers such as language difficulties, limited recognition of overseas qualifications, and cultural adjustment challenges. These hurdles can hinder their ability to fully participate in Australian society and secure stable livelihoods [2, 8].

13. Challenges of racism and discrimination

Despite Australia's multicultural ethos, racism and discrimination remain pervasive issues that affect refugees and broader migrant communities [9, 10]. Many refugees, especially from non-European backgrounds, experience prejudice rooted in racial stereotypes and misinformation. This discrimination manifests in various ways, including social exclusion, workplace bias, and sometimes even violent acts [2, 8].

The media often play a role in shaping public perceptions of refugees, sometimes sensationalizing issues or framing refugees as threats to social cohesion. Such narratives can reinforce negative stereotypes, fueling community tensions. Furthermore, political debates around border security and offshore detention policies have heightened public anxiety about refugees, leading to increased hostility and marginalization [2, 8].

Racism also affects access to services and opportunities. Studies have shown that refugees and migrants from minority backgrounds are more likely to face unemployment, underemployment, and difficulties in accessing healthcare or education. These systemic barriers perpetuate cycles of disadvantage and social exclusion [2, 5].

14. Settlement and multiculturalism

Australia invests heavily in settlement services to assist migrants and refugees in integrating into society. These include language training, employment assistance, housing support, and community engagement programs [2, 8]. The government aims to promote social cohesion and ensure that migrants can contribute meaningfully to Australian society. Australia's commitment to refugee settlement reflects its values of compassion and humanitarianism [3, 5]. However, racism and discrimination continue to pose significant challenges to the full integration of refugees. Combating these issues requires a collective effort—through education, policy reform, and community engagement—to build a more inclusive and equitable society. As Australia continues to welcome refugees, fostering understanding and respect across all communities remains essential for social harmony and national identity [5, 8].

Addressing racism in Australia requires ongoing efforts at multiple levels. Education plays a vital role in fostering understanding and acceptance of cultural diversity [9, 10]. Anti-racism campaigns, community dialogues, and inclusive policies are essential components of this process. Additionally, promoting positive narratives about refugees and highlighting their contributions can challenge stereotypes and build social cohesion [2, 8].

Government policies aimed at reducing inequality and protecting minority rights are also crucial. For example, enhancing language support, improving employment pathways, and ensuring fair treatment in the justice system can help create a more equitable society. Civil society organizations and community groups are instrumental in advocating refugee rights and providing support networks [2, 8].

15. The role of public discourse and media

Public discourse surrounding migration is heavily influenced by media narratives and societal attitudes. The portrayal of migrants in mainstream media can shape public perceptions, often leading to polarized views. Sensationalized reporting on immigration issues can evoke fear and resentment, while more balanced narratives can promote understanding and empathy [5–7].

In Australia, the media plays a pivotal role in framing migration debates and influencing policy agendas and public opinion. As such, it is essential to critically examine how media representations contribute to or challenge existing stereotypes and misconceptions about migrants [8, 10].

16. The need for comprehensive policy approaches

Given the complexities of migration and settlement, there is a pressing need for comprehensive policy approaches that address the multifaceted challenges faced by migrants [2, 8]. Policymakers must consider not only economic factors but also social, cultural, and ethical dimensions [8, 10]. Engaging with diverse stakeholders, including migrant communities, civil society organizations, and academic institutions, is vital for developing inclusive policies that promote social cohesion and respect for human rights [8, 10].

As Australia continues to navigate the evolving landscape of migration, understanding the interplay of trends, policies, and public perceptions is crucial [5–7].

This book aims to provide a nuanced analysis of these issues, drawing on case studies and research that illuminate the diverse experiences of migrants and the effectiveness of current policies [8, 10].

17. Conclusion

In conclusion, the exploration of migration trends and policy issues in Australia is a critical endeavor that reflects broader global dynamics. As we embark on this journey through the subsequent chapters, we will delve deeper into specific challenges and case studies, enriching our understanding of the complex relationship between migration, mobility, and settlement policies. By critically engaging with these issues, we can contribute to informed discussions and practices that promote inclusive and effective migration policies in Australia and beyond.

Australia's commitment to refugee settlement reflects its values of compassion and humanitarianism. However, racism and discrimination continue to pose significant challenges to the full integration of refugees. Combating these issues requires a collective effort—through education, policy reform, and community engagement to build a more inclusive and equitable society. As Australia continues to welcome refugees, fostering understanding and respect across all communities remains essential for social harmony and national identity.

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Chapter 2

A Developmental Relational Analysis of Wicked Refugee Policy Problems

Jeanette A. Lawrence and Agnes E. Dodds

Abstract

Refugee crises present intractable policy problems at international, national and local levels. Refugee policy issues are misunderstood, misrepresented or inadequately processed and unresolved in the tensions of ambivalence to refugees and asylum-seekers. In this chapter, we examine whether refugee migration problems can be characterised as *wicked* societal problems that cannot be solved. On the basis of a schematised analysis of the structure and content of wicked refugee migration policy problems, we propose contemporary developmental science as an appropriate contributor to understanding and managing them. We demonstrate how core developmental concepts provide exceptional descriptions of wicked problems, add to wicked problem formulation, and warrant being a contributor to collaborative understanding and management of wicked refugee migration policy problems.

Keywords: refugee migration policies, wicked problems, developmental science, co-action, person-by-environment co-actions, complexity, uncertainty, probabilistic processes and outcomes, diversity, relational interactions, messy policy

1. Introduction

Refugee crises are re-occurring and disruptive global events that require policy-making at every level of governance: international, national and local, in all countries, rich and poor. Policies made in political response to refugee and migration crises have immediate and far-reaching effect on the well-being of individuals, communities and populations. But refugee policy issues are misunderstood, misrepresented or inadequately processed by governance systems that in their current forms are not fit to deal with the extent and severity of the disruptions caused by refugee mobility [1, 2]. Consequently, refugee policy problems are neglected, “*unowned*” [3] by governments, and global and domestic refugee problems are shelved as some other body’s responsibility [4]. Ambivalence has become a dominant twenty-first century response to refugee migration [5]. Societies live in unresolved tension, holding opposing perspectives of refugees as both innocent victims and threats to society [6]. Refugee

migration policy is a field of societal responsibility that refuses to be shelved, but continually re-presents refugee crises to policymakers also faced with other large-scale social problems [3, 7, 8].

With time running out on global deliberation and action, [9] a productive approach to refugee policy begins with due recognition of the challenges of refugee migration and the intractability of many refugee policy problems. Identifying the structure and content of unsolvable problems related to refugee experiences is foundational to looking for better ways to understand those challenges, then moving to develop collaborative efforts by policymakers and social scientists to find novel insights and ways forward to dealing with refugee crises and managing ambivalence.

Contemporary policy studies have found it useful to apply the characterisation of large-scale, intractable societal problems, such as climate change, poverty and public health as *wicked problems*, following five decades of examination and use of that concept developed by Rittel and Webber [10]. In this chapter, we examine whether refugee migration policy problems belong among those issues, and whether understanding such complicated and unsolvable problems would help devise ways to manage them. In analysing the structure and content of wicked refugee migration policy problems we propose contemporary developmental science as an appropriate contributor to understanding and managing them. We argue that developmental relational science and its analysis of person-by-environment interactions provide exceptional insight into understanding the *wickedness* of refugee policy problems [11, 12]. This science warrants a place in the collaborative, forward-working management of refugee migration policy.

The chapter is organised around first, the background of the refugee migration policy field in contemporary refugee crises and ambivalence to refugees, including under that label officially UN documented humanitarian refugees and also the uninvited asylum-seekers who tax the policies and resources of rich and poor nations across the globe. We then ask if refugee migration policy problems qualify as '*wicked problems*' that demand deep analysis and understanding if the international community is to go forward with managing refugee policy for the benefit and well-being of humanity [13]. We provide an initial, *prima facie* case for treating Refugee Migration Policy Problems (RMPP) as wicked problems, and analyse the wickedness in policy in general and in the refugee migration policy field. We then propose a schematic account of a RMPP, applying Head's defining themes of wickedness - complexity, uncertainty, diversity and insolvability - and identifying the underlying indicators of these themes [13, 14]. On the basis of that analysis, we propose how descriptors generated within developmental relational accounts of refugee situations are a good fit with these underlying indicators and themes. Developmental science usefully contributes to the understanding and formulation of RMPPs. Working within a relational worldview, developmental descriptions, evidence and explanations have a place in the interdisciplinary forward policy planning that Head argues is necessary, due to the inability of individuals and social institutions to deal with the complexity and uncertainty of wickedness [13]. A developmental contribution that is deeply concerned with change, in people and institutions, is especially appropriate because wicked policy issues also keep changing and becoming more and more entangled in their elements and processes.

2. Ambivalence to refugees

Ambivalence to refugees and asylum-seekers has become a consistent twenty-first Century response, with Bhabha especially drawing attention to widespread

ambivalence to migrating children [5]. Media visions of children ‘on the move’ in traumatic and dangerous circumstances fuel tension between humanitarian obligations for child protection on one side, and protection of national interests and population well-being on the other [6, 15]. The unresolved ambiguity of these opposing responses to refugee crises is compounded by the inability of formal scientific knowledge to provide rational, testable courses of action, since knowledge itself is always ambiguous and contested [16]. Governments along with their populations find it more acceptable to hold claims for protection in oppositional tension, or to try to resolve their uncertainty by following one, admittedly flawed option for framing a presenting issue [3]. Ambiguity and shelved obligations are easier to endure than continuing but changing complexity and uncertainty. Norman, for instance, reported that the Egyptian government adopted a working policy of ambivalence towards refugees [4]. Aware of the influx of refugees into its territory, the government chose not to engage with them, but instead, to rely on international organisations and NGOs to engage with refugees on its behalf.

Attempts to simplify refugee policy into either a humanitarian or security problem also fail. Klasche (p. 9) showed that efforts to *deproblematise* the European migrant crisis of 2015 failed and made matters worse [3]. Only faulty framing ideations could support the viability of reducing a complex crisis to one dimension by ignoring an opposing dimension: specifically, by framing the crisis simply as either a security or humanitarian issue. Klasche showed how European countries either tried to reduce or re-categorise the refugee crisis as a non-problem [3]. The ambivalence of ignorance pushed the refugee crisis that already was enmeshed with humanitarian, geopolitical, and political problems into the conceptual limbo of an “unowned” problem. No policymaker willingly takes up the challenge of proposing solutions for unsolvable societal problems, and the international community has no authority to proscribe and regulate solutions generated by individual nation states [6]. Crisis circumstances change but global movements of distressed migrants continue to grow in volume and urgency for an international community already stressed by other global—ecological, geopolitical and economic—problems. Re-occurring, multifactorial, intertwining and changing societal problems that elicit ambivalence instead of adaptive policymaking exhibit the properties of *wickedness* and *messiness* [2, 10].

3. Wickedness in refugee migration policymaking

Engaging with refugee mobility and claims of protection raises multiple policy problems for global, national and local authorities in many nations, some of which, like Nigeria and Turkiye have newly become major refugee destinations instead of origins. As Klasche argued, [3] wicked, intractable problems cannot be set aside but should be *problematized* and treated as genuine issues that must be addressed. Confused and confusing problems like migration that are entwined with other issues of global proportions cannot be analysed without attending to the way they “spill over” to affect cross-national negotiations, and impact national and international sustainability and equity [3, 17, 18]. Recognising obstructions to the definition of refugee policy problems (RMPP) becomes a major step towards confronting the ambivalence they elicit.

Wicked policy problems cannot be identified through the application of formal logic and cannot be solved [10]. Without careful analysis of the characteristics of refugee situations, the extent and intensity of refugee policies are likely to remain poorly defined, misrepresented, and disputed, and to any reasonable degree, unresolved.

3.1 A case for refugee policy wickedness and messiness

Raadschelders et al. [8] developed an initial case for ascribing *wickedness* to refugee migrant policy, and Triandafyllidou [1, 19] added that the migration policy field is ‘messy’—cluttered and confusing—and suitable only for management, not resolving. According to Raadschelders et al., [8] clear understanding of the wickedness of refugee migration policy is thwarted by the volume of refugee migration, the multiple levels of government and actors involved, and differences and clashes between controlling and protective policies proposed at international, national and local levels.

Governments assume that, although risky, migration policies are regular, organised and can produce achievable solutions. But in the same context, migrant activity is uncontrollable, poorly organised and negotiated by mobile people’s subjective agency. At every phase of the refugee experience, people’s dynamic interactions with government and non-government institutions issue in manoeuvres, negotiations and networking that threaten government organisation, and lead to mismanagement and community instability.

Triandafyllidou illustrated the reach and intensity of the disjunction of government-and-refugee perspectives and actions in the varying manipulations of Greek government policy made by refugees from Eastern European countries and Pakistan and Afghanistan [19]. Refugees from Georgia and Ukraine were able to exploit regular travel and tourist visas through travel agents, group tourist arrangements, or family networks to gain entry and manoeuvre loopholes in the system. Refugees from Pakistan and Afghanistan with less local knowledge and access, were dependent on professional people smugglers. Finding ways to fund costly smuggler services was a major part of their refugee experiences. The messiness of refugees’ multiple strategies for gaining and maintaining a place in Greek society could not be managed by regulations, especially as once in society, irregular migrants tended to recuperate from their ordeals, and become resilient and more competent at avoiding government control.

Policy management is further confused whenever governments presume that they can resolve migrant and other major crises in ways that restore societal life to a pre-crisis stability. Such presumptions are fanciful. Societal life itself is constantly changing. The stability, or instability, of the past has already morphed into today’s messiness and that, in turn, will change into tomorrow’s new messiness as people and institutions influence and are influenced by each other. Both the Raadschelders et al. and Triandafyllidou analyses point to the confusion, dissention and uncertainty that create policy problems for governments seeking to control refugee management [8, 19]. Migration policy has appeared in several lists of wicked problems, [7, 13, 20] but without analysis of the particular elements of wickedness in refugee problems that are critical for any forward action by international and national policymakers.

4. The wickedness of policy problems

The wickedness of policy problems has been applied to numerous disciplinary fields over the 50 years since Rittel and Webber’s classic distinction of the *wicked* planning, management and policy-making problems that arise in societal life, from the *tame*, solvable problems of science and engineering [10]. Rittel and Webber originally characterised wicked, “tricky, malignant, aggressive” problems belonging to the sociocultural world under 10 criteria. Wicked problems: (1) are difficult to define, (2) have no stopping rule, (3) have solutions that are not true-or-false but

good-or-bad, (4) have no immediate or ultimate test of a solution, (5) involve no opportunity to learn by trail-and-error, every attempt counts, (6) have no clear sets of potential solutions, (7) are unique, (8) may be the symptom of another problem, (9) have multiple explanations, (10) are made by planners (policy-makers) who have no right to be wrong, no immunity from blame for errors. These criteria have been grouped and summarised variously to facilitate applications of the wickedness concept to particular societal and environmental problems [13, 18, 21, 22]. We follow Head's defining themes of wickedness: complexity, uncertainty, diversity and insolvability, and analyses of the multiple factors undergirding these themes in refugee policy [13, 14, 23].

Politicians and public officials at all levels of national governance make numerous policies to resolve specific problems related to aspects of refugee migration and set up regulations to implement their problem-solving decisions. An individual policy problem, for instance, may address: which refugees to admit or exclude; under which inclusion/exclusion criteria; and for those refugees admitted, which of the UN's settlement options of voluntary repatriation, resettlement and integration to implement [24]. Each problem to be solved contains elements that, by their composition, determine whether or not a particular problem involves wickedness. Along with all societal policy problems, being social rather than technical, [21] refugee migration problems contain elements that meet enough of Rittel and Webber's properties of wickedness to qualify [10].

5. Analysis of a wicked refugee policy problem

Our analysis focuses on problem elements of: broad definitional themes; their underlying indicators; and connection between themes and indicators. The purpose is to show how a refugee migration policy problem is identified as *wicked*.

In an extended inspection of the "wickedness industry" literature, [21] we were surprised by the absence of schematic analyses of wicked problems in specific policy fields. Descriptions are mostly general. The schematic description in **Figure 1** lays out the basic structure of the elements and connections of a RMPP. The figure also shows how developmental relational descriptors of refugee situations contribute to an appropriate understanding of the multiple factors of a problem, and through them, to the defining themes that lead to the ascription of a refugee migration problem as *wicked*.

5.1 Themes and underlying indicators of problem wickedness

Themes of complexity, uncertainty and diversity are shown as individual parts that co-occur and are connected in a wicked problem. There is no causal primacy among them. In an early paper, Head represented them as overlapping circles around wickedness [25]. In the figure, these themes are laid out as parts of a holistic account—together leading to Problem Insolvability and as a set with it to its Wickedness. A refugee policy problem is insolvable by virtue of the combined and intermingling themes.

The themes may not always occur as a full set, although a policy problem is more likely to be impossible to define or manage when all themes are involved. One may be less prominent or be subject to negotiation when people are developing refugee policies. For example, professional social workers developing mental health programs

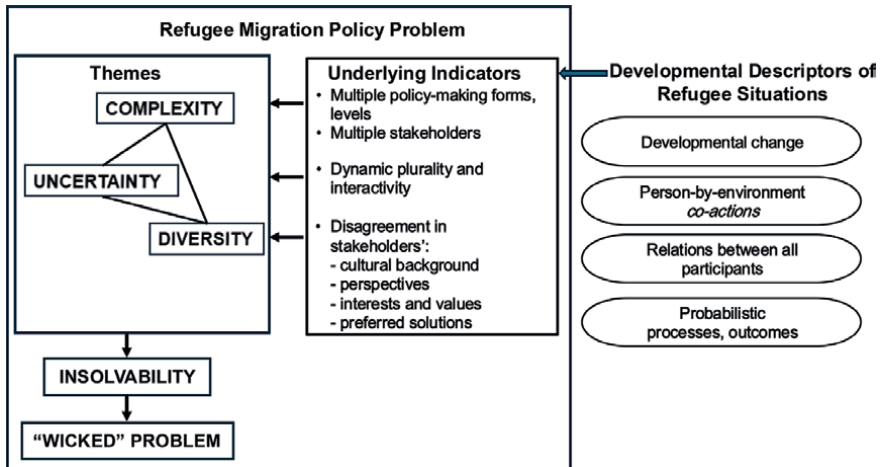


Figure 1.
Schematised wicked refugee migration policy problem with developmental descriptors.

for resettling Syrian refugee communities reduced disagreement and uncertainty in program planning by officially recognising and incorporating the expertise of refugee stakeholders from the community [26]. Their consultative meetings also made planning decisions less complicated. Stakeholders may defy a government's attempt to simplify refugee policy as a matter of border control, but by their efforts may expand policy complexity and uncertainty, as Triandafyllidou showed [19].

Underlying indicators of the broad themes are the multiple factors and dynamic relationships in situations where policy impacts people's well-being. Human impact is direct in most decisions to organise and group refugees into government-introduced categories and procedures [27, 28]. The multiple factors indicating complexity, uncertainty and diversity also are likely to occur in different configurations, depending on the specific policy problem and the sociocultural context.

5.2 Complexity

The complexity of a RMPP means that its parts are “not simply coordinated, but some of them (are) involved in various degrees of subordination, complicated, involved, intricate, not easily analysed or disentangled” (OED). The underlying features of a policy problem can be so complicated and entangled (internally and externally) that there is little if any possibility of teasing them apart to simplify the main issue. They are identified in **Figure 1** as the underlying indicators of complexity—the multiple, entangled policy parts to do with multiple forms and levels of policymaking, people (stakeholders), including stakeholders' perspectives and multiple relationships between stakeholders.

Child protection policy exemplifies how government refugee policies can be entangled in messy ways with other migration policy problems, exacerbating problem complexity. A nation's international obligation to protect the rights of refugee children may be sidelined in favour of protecting other policies, specifically border protection, public imagery and purported risk to the national population [27]. Rigby et al. uncovered discriminatory concepts and inferences in one UK policy document [28]. The policy set up false dichotomies between children who were judged ‘deserving’ or ‘undeserving’ of protection, using words such as ‘clandestine’, ‘dangerous’,

and ‘choice (making)’ to justify reducing protection. Inferred meanings cast unaccompanied children as objects of risk to themselves and UK citizens, and as threats to public safety who were seen as either incapable or unwilling to manage their own risk. Crock revealed how the Australian government failed to honour the protective rights of actual children by claiming to be saving putative children who risked drowning if their families arrived by boat [29]. Shifting the protection discourse onto putative children enabled the government to maintain a humanitarian rhetoric alongside border control exclusion regulations.

Governments may deliberately add to policy complexity by using unrelated legal avenues to achieve refugee exclusions. Ulrich and Crosby discovered this layer of subterfuge in the American Government’s use of a Public Health Order (Title 42) to expel 1.2 million people from Central and South American countries who had entered the country illegally [30]. The order purported to protect the public from Covid-19, but there was no scientific basis and no evidence these people were spreading disease. By using the Public Health Order, the government circumvented people’s international right to seek asylum.

5.3 Uncertainty

Uncertainty is central to Rittel and Webber’s distinction between *wicked* and *tame* problems [10]. Wicked problems have no stop rule (Criterion 2) and no way for problem-solvers to be confident that a solution is adequate (Criterion 4). Uncertainty is not the same as risk. There is no insurance or pre-problem protection against uncertainty. It is related to ambiguity by being differentially entangled with complexity and disagreement, [14] depending on the specific issue and contextual circumstances in which that issue arises.

Uncertainty can be seen in at least four aspects of RMPPs: in the global refugee crises that raise a policy problem; in the formation of the specific problem and the inadequate knowledge brought to problem formation and processing; in the stakeholder interactions and differences operating in the specific problem space; in the cognitive processing of policymakers; and in the outcomes of problem-solving activities in the policy field. In each of these aspects, variability and change add to uncertainty and unpredictability. In light of changing trends in local wars, policymakers may need to reformulate the problem they are addressing, for example, whether a policy to repatriate refugees from war to their own country would involve refolement and violate UNHCR regulations [31]. Accordingly, in the figure, the underlying indicators of uncertainty are specified as the variability and change due to specifics of stakeholders and their perspectives. Whenever human beings are involved, the problem space is subject to variability and dispute.

5.4 Diversity

Diversity or disagreement has already been shown to contribute to problem complexity in the multiple ways different stakeholders think and act. In its own right as an identifying theme of wickedness, diversity affects social problems whenever two or more human persons participate in policy problem-solving. The concept of diversity is most consistently associated with the inclusion or involvement of people from varying cultural or demographic groups. As individuals they bring their own interests, perspectives and values. As members of groups with different cultural, political and refugee statuses and experiences, their involvement, stances, and

allegiances create the scene for active disagreement and antagonism. As a problem theme diversity delineates a particular aspect of the human dimension of wickedness. In the figure, this “dynamic plurality” is identified as disagreements in the framing perspectives, interests and values of different stakeholders. Noordegraaf et al. added that in policy issues, these differences are likely to include political passions, and therefore, to be presented and debated in persuasive communication [7]. Head also saw fragmentation in policy strategies as emanating from stakeholder differences.²⁵ Political debate and persuasive communication, in contested spaces, may add to the underlying diversity of cultural belief systems and advance disagreement and diversity about proposed solutions. Head recognised that possibility but claimed that, in light of disagreement, constructive argument using communication and negotiation was a sensible way forward [13, 23].

5.5 Insolvability

The insolvability or intractability of a RMPP is inferred from the complexity, uncertainty and diversity in its problem formulation, and the impossibility of disentangling these themes and their underlying indicators. We have not labelled the connecting arrow as a causal link. It is inferential. Problem definition and solution statuses may not be well coordinated. The original Rittel and Webber criteria introduce an extensive set of issues related to inability to find a definitive solution to a wicked problem, irrespective of how the problem was defined [10]. Nevertheless, once the themes indicate a policy problem cannot be well defined or understood, it is unlikely to be solved, certainly not in the long-term. The entangling of the indicators and themes blocks defining it with any clarity and consequently being able to solve it [22]. In such policy cases, Crowley and Head noted that the problem-solving process becomes dependent on political judgement [21]. But the exercise of political judgement exposes policy processes to further complications if the new political perspectives are disputed views. New off-shoot problems are likely to emerge and subsume the original problem (Rittel and Webber’s Criterion 8) [10]. Entangled messiness is not consistently disentangled by the injection of new ideas.

Different definitions of the actual policy problem add to its intractability. For instance, the Australian parliament is fiercely debating policy decisions about asylum for Palestinians fleeing the Gaza war. Political party perspectives differ on whether the problem to solve should be regulating visa conditions or activating humanitarian programs. Some policymakers may be satisfied with short-term solutions that respond to the forcefulness of dominant stakeholders. Bowing to pressure for greater national security ignores humanitarian obligations. The effects of a short-term, stop-gap failed solution, however, cannot be wiped out or reversed, according to Rittel and Webber’s Criterion 5 [10]. Failed solutions leave their own entangling traces that affect further possibilities and add to ultimate insolvability.

In summary, *wickedness* is ascribed to a RMPP, then, with the inferential structure represented in the figure. We set out to show schematically the elements and linkages that warrant the “*wicked*” label based on Head’s themes [13]. From this specification of the elements and linkages behind problem wickedness, in the next section, we propose the descriptive relevance, appropriateness, usefulness of a developmental relational account of refugee situations and the evidence it adds to understanding the wickedness of RMPPs.

6. Applying developmental relational descriptions to refugee policy problems

Developmentalists have not always been accepted or eager contributors to policy or public life. Accusations of preoccupation with children's "becoming" to the neglect of their present "being" and the neglect of adult development cannot be sustained in the face of twenty-first Century relational systemic analyses and commitments to life-span development [32, 33]. In some sense, developmental scientists have been complicit in their absence from the policy domain, mainly due to reluctance to risk misinterpretation and mismanagement of scientific knowledge in public debate [34, 35].

Contemporary developmental science emerged in the last century as an inter-disciplinary movement within a relational worldview larger than reductionist behaviourist developmental psychology. Relational developmental analyses typically focus on ontological changes in persons in their dynamic interactions with other persons and institutions. Being an organic system open to other systems in the ecological environment, a developing person can organise and re-organise parts of themselves as they adapt to relations and activities in the changing phenomenal world. Changes are worked out, co-constructed in relations with other people and social institutions, whether those relations are co-operative or antagonistic.

The figure locates developmental descriptors of refugee situations outside the problem in the phenomenal world. Four core developmental relational concepts are connected to the policy problem at the level of providing relevant descriptors of the factors, processes and outcomes that are underlying indicators of the complexity, uncertainty, and diversity of a RMPP. Descriptors focus attention onto: developmental change, person-by-environment co-action, in relations between all participants, persons and institutions in refugee situations, with probabilistic processes and outcomes.

6.1 Developmental change

Developmental change is the organic, ontological change of individual persons that occurs over the whole life-course. Natural to humans as organic, living systems, it does not happen automatically, and it does not happen in isolation. Each human person is an embodied living system open to other organic and structural systems in the environment through their bodily activities. Change is experienced as the person's mastery of challenges and tasks that are culturally associated with different life periods, such as initially learning how to relate to other people in childhood, modifying modes of relating to parents and peers throughout adolescence and early adulthood, adapting relations to adult children in later life. Individuals accomplish these tasks in different ways and in individual time frames that are culturally contextualised and normalised.

Individuals' changing experiences, never solo, are *co*-constructed in interactive relations with other parts of the environment, and because *co*-constructed, outcomes for one side—the person—also influences outcomes in the other side—people, institutions, policymakers. A lens focusing on developmental change then, uniquely directs attention to the individual and their changing experiences, and spreads out from there to others related to that individual. That primary focus contributes to explaining some of the human complexity operating in a refugee policy field.

Refugees and migrants like all other developing persons are simultaneously experiencing their own ontological developmental changes and the challenges and opportunities afforded them by their refugee-specific life circumstances. Refugees whether children or adults are not abnormal or inherently strange people, but normal people in abnormal and strange situations [36].

Policymakers in government or non-government roles also are individual persons experiencing their own developmental challenges and accomplishments as well as acquiring the competence to fulfil their professional roles. Their perspectives significantly shape the way that debate and research evidence is used in making policy decisions. In a study of 70 Australian government and business policymakers by Dunn and Laing, [37] relevance and persuasiveness were considered more important in the presentation of research than credibility and legitimacy. That view has potential for limiting how research evidence becomes effective in practice.

Some of the complexity in refugee situations must be seen to arise from people's personal present and past experiences that may have mixed meanings and constraints for other people. For example, a study by Huijsmans revealed the outcomes for young people whose Laotian parents and elders organised formal networks to protect them when they migrated from their villages to work in Thailand [38]. Elders organised formal networks with the assumed safety of contractual relations and legality. But these arrangements had stringent entry requirements and reinforced young people's dependence on parents and curtailed their independence. Less secure informal networks allowed the young people greater scope for agency and managing outcomes.

6.2 Person-by-environment co-actions

Long-term developmental changes and also immediate situational changes are shaped by the coordination of a person's own actions with the actions of other forces in the environment. Their *co-acting* produces a unique experience where influential forces come bi-directionally from within and without a person and affect personal and non-personal participants, but in different ways.

The environment contributes physical structures, cultural beliefs and practices, and human and institutional activities that constrain or enable a person's experiences, "affording", that is, resourcing, giving them access to different possibilities and opportunities while denying access to other possibilities [39]. The person acts within the scope of the environmental provisions and makes their own contribution. They give environmental constraints and facilities meaning as they take cultural and inter-personal meanings into their own thinking and use that material to interpret the environmental affordances in accord with their cultural background, experiential history, self-narratives and cognitive capabilities [12]. Personal contributions may be generated from a pre-engagement intention or arise and be transformed within the dynamic flow of ideas and actions [40, 41].

Co-actions are not all intentionally collaborative; they may be resistant or subversive. All participants in an environment, including young children, have the propensity to agree, resist or subvert institutional pressure. People must find or make conditions that facilitate their wellbeing and sometimes their survival. Utas described how trafficked women and child soldiers manipulated other people's perspectives and actions towards them by projecting self-images of themselves as victims [42]. Thompson et al. reported how children being smuggled into the USA from South America used their own ingenuity and agency to secure their entry. Some explained how they took calculated risks that made them vulnerable but led to their agentic

management of circumstances despite the corruption of their 'coyotes' smuggler guides and border conditions [43]. They also exposed themselves to risk of return by lying to authorities. Refugees are contributing agentic participants with their own stake in policy processes and outcomes, as the Triandafyllidou, Utas, and Thompson et al. examples showed [19, 42, 43].

Refugees' relations with social systems bring about change in the larger social system as well as in other individuals. For example, patterns of actions and regulations that excluded refugees from health services during the Covid-19 pandemic had flow-on effects for them in restricting their access to other services, such as housing and transport. According to a multi-component ecological analysis by Matlin et al., deficits in health services for refugees and migrants also affected health security in host countries and then for the global population. The interactivity of multiple people and institutions in refugee situations is a sure sign of the entangled elements of policy problem complexity [44].

An appropriate illustration of ongoing interactivity and the impact surrounding a specific refugee event is provided in an analysis by Clark-Kazak of the action by a small group of Congolese refugee students in the Kyaka II Camp in Uganda in 2004 [45]. The students demonstrated against their high school's demand for contributions to fees in cash or in-kind. They were claiming the right to free education. An NGO introduced students to children's rights. Around 20 students organised a demonstration. They took school keys, locked the school and walked to the police station and surrendered the keys. Students later said they were beaten by settlement officials and police officers. Fourteen students were arrested and gaoled. They were not charged, had no legal representation and were released after three days. Over several days and venues, the students interacted with individual authority figures and organisations in differing relationships, challenging adult authority and care.

Extensive interviews and field work by Clark-Kazak and her trained refugee associates revealed the diverse perspectives on the meaning but not the facts of the event, as reported by different stakeholders involved with the camp and the school [45]. For many young people, the event indicated the hierarchical decision-making in refugee policy and programming that excluded them as participants. Members of a Parent Teacher Association disagreed with student participation in decision-making and removed demonstrators from leadership roles in the school. Many adults from the Congolese refugee and Ugandan host communities disapproved the demonstration, but also the camp authorities' response. For camp authorities, the demonstration was a matter of security and dealing with force against aggressive and "illegal behaviour". The complex and intertwining actions, interpretations and reactions related to this incident underlines the importance of recognising and tracking the multiple possibilities that may proceed from any interactivity, especially as they reveal over time different perspectives of the same refugee problem. The presence of developing persons in a place sets up that place as a dynamic situation that is further complicated by their interactions.

Two macro-level policies that together produced hardship for asylum-seekers in Hong Kong led to cyclical patterns of collective response and changes in direction in how refugees interacted with the system [46]. The policy for government support restricted asylum-seekers' access to food and essentials because it had given them pre-paid cards that could only be redeemed at designated supermarkets. At the beginning of Covid-19, the general population engaged in panic buying, and the designated supermarket shelves were emptied of food and masks. An advocacy group led by asylum-seekers, ALO-1 had from 2014 organised protests against government

policy. The group withdrew from protest action following a government crack-down on protest, and during the pandemic moved from advocacy (that they now saw as futile) to active aid work for their constituency. In 2020, when a petition to the Social Welfare Department for increased assistance was refused, ALO-1 members pivoted away from advocacy work and turned to the local community for support. They organised online appeals and an aid distribution centre to fill the gap in government assistance. Refugee push back on tougher policy is a form of interaction that could be lost if the temporal adjustments were overlooked.

6.3 Relations between all participants

Person-by-environment interactivity guarantees that what happens in any refugee situation cannot be attributed to a single agent. A person's experience is relational and interactional; according to Gottlieb (p. 163) "experience is defined as an interactive activity whether it is analysed under or outside the skin of the organism" [11]. Intentions are not operational until they are enacted within an encounter, that is an encounter because of the reciprocal activities of all participants. Refugees act and are acted upon by individuals, families, communities, organisations and governments.

Relationships are of different kinds and can have differing outcomes. They may be positive and supportive or negative, controlling and disruptive of the acquisition and management of useful skills, as De Mol et al. found in family counselling [41]. In fact, a large range of effects of relationships either constrain or enable a person's activities and experiences [12]. In refugee situations where there is a power imbalance, dominant forces impose boundaries and regulations that constrain the activities and opportunities of refugees. But as we have shown above, even powerless persons may resist constraining and instead, constrain back on cultural or government forces, so that constraining and its opposing enabling also are relationally worked out in bidirectionally exerted forces. Marshall reported an unusual case of refugee counter-enabling initiated by Palestinian children who were participating in an NGO humanitarian program [47]. The program was designed to directly respond to children's trauma-affected behaviours by giving them alternative strategies to violence. The children who saw themselves as members of a resistance community took up program tools facilitating creative self-expression strategies and used them in the politics of anti-occupation resistance.

The effects of interactions come from the form of the relationship and what participants construct together by their related, bidirectional and conjoined activities [48]. Some refugee young people step in to fill leadership gaps when elders abdicate their responsibilities [49]. A constraint on youth leadership, however, is that it may not transfer across situations, as Payne found among young people called upon to become heads of households following disaster in Zambia [50]. They became disillusioned and resentful when their leadership abilities were not accepted in other community venues. Their new ways of relating to people clashed with cultural norms.

Organisational practices may be remote from the activities and relationships of refugees' everyday experiences, but they have an influential reach into how people live. Societal practices may set up and shape experiences without any malice, simply by the combination of environmental and societal forces operating in a place. Places in the same country provided different economic opportunities for refugees in Uganda in a study by Betts et al. [51] With a large sample of refugees and controlling for nationality, education and length of exile, Betts et al. found differences in

economic outcomes related to whether refugees were living in a city, Kampala, or in protracted or emergency refugee camps. In the urban environment, with the positive affordances of large markets and lower barriers to work, refugees were able to create higher incomes than others in the protracted camps where there was less scope for innovation and farm economy. Economic prospects were lower still in emergency camps where international organisations controlled a surrogate state offering poor opportunities for trade and exchange. The organisational structure of the three environments differentially enabled or constrained independence and innovation among refugees. In addition, Betts et al.'s more finely focused analyses revealed that in Kampala, entrepreneurial business ventures by a small group of innovative refugees created work opportunities for host country Ugandans as well as other refugees. A complicated relational connection was facilitative of people's economic wellbeing although entangled with other relationships.

Policies can impact on refugees directly through their relationships with people who implement policy in practice. Organisational procedures worked against asylum-seekers in the system of practice rules designed to streamline and standardise implementation of Switzerland's asylum policy. Front-line workers were given some discretion in how they applied practice rules to individual cases. Miaz discovered, however, that their discretionary judgements were most often biased towards rejecting asylum applications rather than facilitating resettlement in Switzerland [52]. Workers' adjudication training had emphasised searching for inconsistencies and contradictions in asylum-seekers' stories with a view to justifying rejection. The right to appeal against practice rule adjudications moved asylum-seekers into a different venue, the court system, with different relationships and procedures within the policy system.

Structural powerlessness does not always stop refugees from addressing their interests and concerns or from acting to regain some control over their lives. Refugee women in West Yorkshire, UK told Hunt about the things they did to give them self-determination [53]. Denied social status and access to work, and inappropriately dispersed across the region, the women told how they would, for example, buy a car, attend support groups and college courses and engage in paid voluntary work. For Hunt, they used "creative agency" to change conditions. She also noted the bi-directional effects of their efforts in the adjustments made by services and especially by their grass roots workers in response to the women's agency. For example, workers went outside their original professional remit to expand the advice and support they gave to the women who had grown to trust them. They changed their services to incorporate the special needs of women asylum-seekers, including calling extra counselling and legal services into meetings when needed. Actions generated in relationships softened the effects of policy at the grass roots level and created new possibilities for future women refugees as well as for the agentic women who had brought about structural change.

Refugees and asylum-seekers are located in situations where they must find ways to relate to many different people in the policy field. They mostly work from positions of powerlessness and reduced social capital. The examples here demonstrate that as agents, refugees do not always follow the scripts written for them by policymakers and practitioners. The policy field is porous and is most often breached at the point of relations between people. Policy is invariably implemented at the local level, [8] where human interactions can sway regulations, as Hunt discovered [53]. Even in relations with government, refugees may navigate conditions or, as in the case reported by Lam, make a conscious choice to cease engagement [46].

6.4 Probabilistic processes and outcomes

Two aspects of developmental analyses guarantee the uncertainty of a RMPP: the agency of persons and the open-ended, probabilistic processes and outcomes involved in the person-by-environment co-actions we have described. The presence and activity of a human person in any phenomenal or conceptualised encounter make it impossible to make definite pre-encounter predictions about what will emerge. Agents have ability to initiate, execute, interpret and then reflect upon actions made by themselves and others. They also are vulnerable to other people's agentic actions that may cause them threat or risk [54]. When experiencing vulnerability and outside constraints on their agency and self-management, refugees are likely to act, and to act in ways that are not pre-determined. They have adaptive capacity to pursue their own interests and intentions or to cope with what they cannot control, with the proviso that their agency will be realised in interaction.

The Netherlands government's policy of providing professional mental health support for refugees was rejected by refugees from several Middle Eastern and African cultures. They were reluctant to be stigmatised as 'mad' in their cultures that had no concept of mental health and that frowned on publicising personal problems outside the cultural community [55]. As Anderson pointed out, making oneself open to others simultaneously exposes a person to being vulnerable as well as agentic [56]. Vulnerability and agency, in fact, are often intertwined, especially in situations weighted by power imbalance, and refugee situations figure largely in these kinds of unequal conditions. In such conditions, persons may use their adaptive capacity in ways that range from putting them at greater risk to giving them greater situational control. Whatever they do, there are other persons there who also have agency and adaptive capacity who may not agree with the initiator's actions. By virtue of being made *in situ* and by *co-action* involving agentic and vulnerable people, constructed experiences emerge probabilistically through uncertain processes and produce uncertain outcomes [11, 36]. There should be no surprise that refugee policy fields are uncertain.

In summary, developmental relational core concepts offer a lens on refugee situations that reveals multiple personal and environmental factors that otherwise may be hidden in the conceptualisation of RMPPs. A developmental approach highlights the need to describe individual stakeholders as precisely as possible and their interactive involvement with others in the specific policy situation under scrutiny. For example, assessment of claims for protection as children under 18 years was complicated in the UK by inappropriate reliance on assessors' visual appraisals of children's ages or error-prone "objective" measures [28]. Describing entangled relations and co-active constructions is complicated, but a developmental lens gives a means for better understanding the complicating intertwining that cloaks clear definition of the actual problem. It illuminates, for example, the influence of biased training of workers as in the Miaz study, [52] refugee stakeholders' agentic influence like Hunt found, [53] and the macro-level changes in refugees' adaptations reported by Lam [46]. These are just several examples of interactivity by and with refugees that complicate identification of the critical elements of a problem, and ultimately its formulation. Indeed, a developmental relational approach would direct attention to more precisely describing the totality of a particular interaction rather than trying to disentangle its strands. It is the intertwining co-actions that identify that particular problem, not its individual strands. It is especially useful to recognise the probabilistic processes and outcomes involved in these interactions, and to not be bogged-down in fruitless

predictions of processes and outcomes. Focusing a developmental lens on people and their interactions is a robust way of understanding problem complexity. It also is a means of addressing Noordegraaf et al.'s call to sharpen attention to the situations and circumstances of difficult social problems [7]. A holistic approach focuses on the whole situation and does not try in vain to identify entangled parts as individual variables. Because these elements cannot be pulled apart and considered separately, the formulation of RMPPs benefits from a developmental relational lens as one contributing piece of collaborative management.

7. Ways forward with wickedness

We set out with the dual aims of examining the dimensions of problem wickedness in the refugee migration policy field, and demonstrating the value of including contemporary developmental science in collaborative efforts to find a productive way forward to managing policy problems related to refugee experiences. The schematised structure of a wicked RMPP in **Figure 1** is the foundation for examining whether a particular refugee problem warrants the *wicked* label. It also adds to problem analysis a set of developmental concepts that, when applied to refugee situations, usefully identifies problem parts that make for a RMPP's wickedness. Obviously, the usefulness of this analysis for policy management partly hinges on the overall value of the *wicked problem* concept, in itself a contested issue [7, 13, 57, 58].

There are several possible ways forward for dealing with *wickedness* in relation to RMPPs, among them, dropping the wickedness concept completely, or softening its dominance with the *messy* motif. The most extreme option is to abandon the *wicked problem* concept altogether, while continuing to problematise refugee policy. For example, Turnbull and Hoppe argued that the theoretical faults of wickedness theory resist precise definition and disrupt practical policy work by separating certain problems from the relationships between policy workers dealing with them [58]. There is no class of wicked problems with special ontological status, and *wickedness* should be recast as differing levels of problem difficulty and structure. Difficulty, they argued, could best be identified as the political distance between participants in terms of ideas, values, interests, institutions. Noordegraaf et al. similarly criticised the weakness of wickedness theory and advocated "rethinking at the microlevel" of policy problem-solving [7]. Their concentration on policy practice at the everyday level led them to propose moving attention from *problem wickedness* to *wicked situations*, and especially to how practitioners handle and cope with complexity. Acknowledging that disagreement about wickedness may impact how issues are managed especially in local policy, Head suggested that a sliding scale may be useful to specify different *tendencies to wickedness* [13]. The wicked problem industry is too heavily embedded in contemporary analyses of societal management to abandon it, and there is promise of more productive management in recognising the presence of one or more wicked-making themes in particular problems. Peters and Tarpey agreed that although few policy problems would exhibit all the characteristics of *wickedness*, those characteristics could be used as a checklist for understanding the aspects of a problem that make its resolution difficult [57]. Without endorsing the checklist idea, we agree that it is useful to have a scheme for identifying problem situations and details for the largely unacknowledged interactions compounding intractability.

Expanding instead of abandoning the *wickedness* concept has been proposed in terms of softening it by accounting for the *messiness* of the problem, the policy field

or the specific situation in which a problem occurs. Ney grappled with the weight and reach associated with the wickedness of society's policy problems, and applied Ackoff's idea of the *messiness* of the dynamics of interacting and changing problems in management situations [59–61]. Messes are systems of problems that cannot be handled independently. According to Ney and Verweij, the *messiness* of a policy field comes from the interplay of complex, confusing and contradictory factors [2]. They presented a case based in cultural theory for opening up the scope of policymaking in institutions to facilitate the generation of '*clumsy*' solutions that recognise that policy efforts need to be as pluralist and multifaceted as contemporary social problems. Clumsy solutions give more stakeholders a voice, and generates deliberative management [2]. Again, we welcome this attention to the dynamism and interactivity of all participants and have shown that neglecting that interplay—in space and over time—bears the risk of misrepresenting the underlying features of a RMPP and especially its complexity. Some problems are both *wicked* and *messy*.

There may be mixed consequences of extending the *wickedness* concept with *messiness*. It may allow, for instance, as Peters and Tarpey suggested, [57] policymakers to keep more problems off the policy agenda as too hard and costly. There does seem to be merit in proposals for some form of graded system of problem *wickedness*, [13] whether or not Turnbull and Hoppe's distancing criterion is adopted [58]. There may be practical effectiveness in adding the significance of *situational wickedness*, but not as a substitute for close analysis of problem formation. Individual agency and social interactivity operate at multiple levels and across time in the policy field, and their influence on conceptualisation of a specific problem involves more than the social composition and interplay of an institutional context. Overall, regardless of the historical background and current devotion to the idea of wicked problems, if the policy world continues to consider the wickedness of some of humanity's greatest problems, that label may productively be applied in the refugee policy field. We have built the case for treating refugee migration as one of those global *wicked*; possibly *wicked and messy*, possibly also a super problem that impacts the whole of humanity. The applicability of a developmental relational approach to refugee policy problems stands irrespective of whether or not a problem is designated as *wicked*; regardless, developmental concepts usefully describe interactions between refugee persons and others in refugee situations. Precise identification of problem elements is valuable for the formation of any policy problem.

8. Conclusion

Recurring refugee crises and waves of refugees and asylum-seekers present international, national and local policymakers with multiple policy problems, ranging from how to distribute the burdens of protecting and providing for displaced persons across richer and poorer nations, through dealing with the tensions incurred by pitting the needs of refugees against national security, to providing services for refugees and asylum-seekers in local communities. Although these policy problems may differ in elements and structure, they share the characteristics of being difficult to define and impossible to solve in any definitive or permanent way.

Recognising the complexity, disagreement and uncertainty that marks policy problems related to refugee experiences, and with a large body of research available on the wickedness of major social problems, in this chapter we set out to examine

whether refugee migration policy problems can be treated as *wicked* problems in the way that climate change, poverty, public health and homelessness are treated. We saw two values in this identification. First, clearer understanding of the complex, diverse, uncertain and intractable dimensions of problem wickedness in the refugee area would be a foundation for pursuing a more pluralistic, collaborative and informed ways of searching for realistic if partial solutions, and for turning away from avoidant and ambivalent perspectives and actions. Second, generation of that clearer understanding requires being able to describe the features of refugee situations that underlie and exacerbate policy problem wickedness. We worked with the dual aims of analysing the structure of a wicked refugee policy problem, schematising its elements and connecting themes; and then demonstrating the usefulness and appropriateness of applying core concepts of a developmental relational approach to describing and illuminating the components and linkages of a wicked refugee policy problem and its insolvability.

On the basis of our analysis, we have established that a representative refugee migration policy problem belongs in the class of large-scale social problems identified as wicked. Drawing on Head's defining themes of wicked problems as complex, uncertain and diverse, [13] our schematised representation includes with those themes the multiple underlying factors that point to the defining characterisation of the themes and how, in their holistic combination and intermingling, they lead to the inference of a problem's insolvability. Together with insolvability, these themes, in various combinations identify a refugee policy problem as wicked. Our schematisation is novel in the wickedness field in laying out the elements and linkages involved in wicked problem formation.

The second part of our approach applies four core developmental relational concepts as descriptors of the elements of the problem. They focus attention on the multiple features of refugee situations in terms of the human and social dimensions of individual developmental change, person-by-environment co-actions, relations between all participants, with the probabilistic emergence of interactive processes and their outcomes. We point to the good fit of developmental relational analyses of refugee situations with the conceptualisation of the features that feed into the specification of wickedness.

The good fit of developmental relational descriptors to problem identification is ground for including developmental science among the array of scientific disciplines and policy practices that provide evidence-informed analyses of issues and options and is suitable for working alongside policy-related actors to improve the quality of public debate on important issues in terms of Head's proposal for collaborative, pluralistic, informed management of wicked policy problems. Inclusion of a developmental approach, with its focus on human agency and interactivity, adds to the effectiveness of collaborative pluralism.

The value of this proposed structure and components of this representative problem now may be tested on refugee policy problems situated in a particular policy field. Its value hinges only partly on the usefulness of the wickedness concept. The developmental relational lens is suitable for describing the dynamic interactivity operating in a range of policy problems, whether or not they are classed as wicked or in terms of a scale of difficulty and insolvability. Recognising that refugee policy problems are intractable and cannot be solved simply and finally also establishes that they cannot be shelved, unowned or avoided without significant effects on humanity.

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Conflict of interest

The authors declare no conflict of interest.

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Challenges of Immigration Policy Reform in the US: A Sociological Perspective on Partisan Divisions

Stacey Ussery Tucker

Abstract

Immigration is a complex and contentious issue in the United States, with political partisanship playing a significant role in shaping policy, practices, and perceptions. Despite being one of the most pressing national issues, efforts to reform immigration policy are consistently hindered by partisan politics. This chapter explores immigration trends in the U.S. over the past two decades and delves into four key issues: border security, the economic impacts of immigration, public perceptions, and integration and social issues. By studying the social, cultural, and economic factors that influence attitudes toward and policy decisions surrounding immigration, sociologists can help policymakers develop more effective and equitable immigration policies.

Keywords: immigration, partisanship, politics, sociology, social policy, immigration policy, partisan politics

1. Introduction

In the U.S., immigration stands out due to its sheer scale and long-term impact, making it a significant political issue for many Americans. Unlike other political topics, immigration is massive, local, and enduring. In fact, for more than 50 years, the number of immigrants arriving in the U.S. is more than a million annually. This has led to immigrants and their children comprising one in four Americans, resulting in noticeable demographic shifts over time. The diversity of immigrants, who differ racially and ethnically from the native population, has transformed the U.S. from a predominantly black-and-white society to a more complex racial landscape. Latinos now outnumber African Americans, and Asian Americans are a rapidly growing subset of the population. These changes are evident in media representation, daily interactions, and the evolving business landscape, making immigration a central concern for the political arena [1].

Immigration is both a complex and contentious issue in the U.S., with political partisanship playing a significant role in shaping policy, practices, and perceptions. Despite being one of the most pressing national issues, efforts to reform immigration policy are consistently hindered by partisan politics. While the two-party political system in the U.S. has evolved since its inception, each party has staked out a recognizable identity. Today, Republicans are considered conservative or right-leaning,

with an emphasis on a strong military, traditional values (pro-nuclear family and anti-abortion) and minimizing government interference in markets. Democrats are considered liberal or left-leaning, with an emphasis on government-funded social programs, diplomacy over military action, and values placed on reproductive choice, and equity and diversity. Regarding immigration, conservatives tend to support more restrictive policies; liberals tend to oppose policies that target specific groups, particularly the undocumented [2].

The past 24 years have seen four presidential terms oscillating between the two parties. Each of the presidents—George W. Bush (2001–2009), Barack Obama (2009–2017), Donald J. Trump (2017–2021), and Joe Biden (2021–2024)—proposed immigration reforms as part of their campaigns or term(s), yet no comprehensive legislation moved successfully through Congress. Many of the bills put forth were bipartisan but they still could not overcome partisan opposition. For example, during the George W. Bush presidency, Republican Senator John McCain and Democratic Senator Edward Kennedy introduced the Secure America and Orderly Immigration Act, also known as the McCain-Kennedy bill in 2005. This legislation aimed to grant 6-year work visas to undocumented individuals and provide a pathway to legal residency after paying fines and passing background checks. Additionally, it proposed an “essential worker visa” for 400,000 workers annually, offering them a route to legal residency. However, the bill was never voted on in the Senate. During President Barack Obama’s tenure, a bipartisan group of senators, known as the Gang of 8, crafted an immigration reform bill. The bill proposed a pathway to legal status and eventual citizenship and set objectives like constructing 700 miles of border fencing, implementing an employment verification system before undocumented individuals could apply for legalization, and increasing the number of Border Patrol agents. While it passed in the Senate in 2013, House Speaker John Boehner refused to bring it to the House floor [3].

This chapter explores immigration trends in the U.S., focusing on the past two decades and delving into four key issues: border security, the economic impact of immigration, integration and social issues, public perceptions, and the political responses to each. By studying the socio-cultural, economic, and political factors that influence attitudes toward immigration, sociologists can help policymakers better understand the underlying causes of partisan divisions and develop more effective and equitable immigration policies.

2. U.S. immigration policy in historical context

The history of U.S. immigration policy has been marked by varying levels of inclusion and exclusion, often influenced by the socio-political context of the time. Early policies aimed to exclude “undesirables” such as criminals and those with diseases, establishing national quotas favoring European countries. By the end of the eighteenth century, America had developed a society heavily influenced by English language, law, and customs, with significant contributions from other European nations. The libertarian ideals of America, including providing asylum for the oppressed, aligned well with the needs of both the U.S. and Europe in the nineteenth century. This period saw mass migration due to Europe’s overpopulation, social changes, and economic upheaval, including the breakup of medieval agricultural systems and the onset of industrialization. Many Europeans, including displaced peasants and artisans, emigrated to the U.S. seeking better opportunities. America needed immigrants

to expand its frontier, build infrastructure, and support economic growth, driven by the belief in manifest destiny and the country's role as a refuge for the oppressed [4].

The Immigration Act of August 3, 1882, recognized as the first general immigration statute, was enacted due to the rising number of immigrants and the concerns of lawmakers and citizens about who was entering the U.S. Later in 1882, the Chinese Exclusion Act was enacted, the first law to base entry eligibility on national origin, and it remained in effect until 1943. In addition, influenced by economic depression, strikes, and labor movements like the Knights of Labor, contract labor laws were introduced in the 1880s to prohibit the importation of foreign labor under contract. These early laws focused on individual qualifications and national origin, and they sought to protect U.S. labor, forming the basis for restrictive immigration policies post-World War I. Thus, the history of U.S. immigration policy, beginning in the 1930s, has been characterized by a tension, resulting from the attempt to accommodate the traditional ideal of providing asylum from oppression within the framework of a comparatively restrictive set of immigration laws [5].

The Displaced Persons Act of 1948 was the first refugee legislation, influenced by the U.S.'s role as a Western alliance leader post-World War II. When the Immigration and Nationality Act (INA) of June 27, 1952 revised existing immigration laws, slightly relaxing Asian entry restrictions, it continued the national origins quota system, favoring Northern and Western Europe and disappointing those seeking liberalization. It also established a four-category selection system, prioritizing education, abilities, and family reunification, leading to a broad 1965 policy revision. The 1965 amendments to the 1952 Act repealed the national origins quota system, focusing on family reunification and skills needed in the U.S. This significantly shifted the pattern of migration to the U.S. from European countries to Asian and Latin American countries [5].

In 1986, due to rising unauthorized immigration, Congress legalized about 3 million unauthorized immigrants while, at the same time, requiring all workers to prove their employment eligibility. The goal was to wipe the unauthorized immigrant slate clean; however, in 1996, unauthorized immigration remained a concern, leading Congress to blame the INA's leniency. Consequently, stricter immigration laws were enacted, including mandatory detention and the removal for many more violations; in addition, extensive restrictions were placed on those who sought re-entry after deportation. Then, after the 9/11 terrorist attacks on the U.S., immigration policy shifted to prioritize security, leading to the creation of the U.S. Department of Homeland Security and an increased scrutiny of immigrants and travelers [6–9].

3. Recent immigration trends and proposed reform

Despite the partisan pendulum swings and the subsequent attempts at comprehensive reform, immigrant numbers in the U.S. have held relatively stable with some fluctuation, e.g., a sharp decrease in 2020 during the COVID-19 pandemic and a rise in 2021–2022. The largest number comes from noncitizen admissions, such as temporary workers, students, and travelers, averaging close to 160 million each year (see **Table 1**).

According to Giovagnoli [7], despite the stability in numbers, the 1996 immigration reforms resulted in problematic enforcement policies that did not keep pace with economic changes and often ignored the contributions of immigrants. The law increased penalties and reduced relief options, leading to more mandatory detentions

Year	Granted lawful permanent residence status	Refugees arrivals	Individuals granted asylum	Persons naturalized (citizenship)	Noncitizen admissions [*] (e.g., temporary workers, students, diplomats, and travelers)	Expulsions and noncitizen apprehensions
2000	841,002	72,165	32,514	886,026	NA	1,814,729
2001	1,058,902	68,920	39,148	606,259	NA	1,387,486
2002	1,059,356	26,785	36,937	572,646	NA	1,062,270
2003	703,542	28,286	28,743	462,435	180,500,000	1,046,422
2004	957,883	52,840	27,376	537,151	180,200,000	1,264,232
2005	1,122,257	53,738	25,304	604,280	175,300,000	1,291,065
2006	1,266,129	41,094	26,352	702,589	175,100,000	1,206,408
2007	1,052,415	48,218	25,318	660,477	171,300,000	960,673
2008	1,107,126	60,107	23,022	1,046,539	175,400,000	1,043,759
2009	1,130,818	74,602	22,303	743,715	162,600,000	889,212
2010	1,042,625	73,293	19,777	619,913	159,700,000	796,587
2011	1,062,040	56,384	23,631	694,193	158,500,000	678,606
2012	1,031,631	58,179	27,446	757,434	165,500,000	795,735
2013	990,553	69,909	24,631	779,929	173,100,000	786,223
2014	1,016,518	69,975	23,038	653,416	180,500,000	805,334
2015	1,051,031	69,920	25,946	730,259	181,300,000	596,560
2016	1,183,505	84,989	20,311	753,060	178,700,000	683,782
2017	1,127,167	53,691	26,382	707,265	181,100,000	607,677
2018	1,096,611	22,405	37,702	761,901	186,200,000	739,486
2019	1,031,765	29,916	45,805	843,593	186,200,000	1,175,841
2020	707,362	11,840	30,736	628,254	86,100,000	609,265
2021	740,002	11,454	16,628	813,861	35,300,000	1,865,379
2022	1,018,349	25,519	36,615	969,380	96,800,000	2,584,220

^{*}Rounded to nearest hundred thousand.

Table 1.

U.S. immigrant numbers since 2000, US DOHS [10–12].

and enforcement actions, including mass worksite raids and collaboration between federal, state, and local law enforcement [7]. Thus, many non-violent immigrants have been arrested, and deportation has almost certainly been due to limited relief options, significantly impacting U.S. families and communities. The lack of adequate legal immigration channels, combined with strong economic growth before the 2008 recession, attracted unauthorized immigrants who were less likely to return home. Although unauthorized immigration slowed after the recession, 11 million unauthorized immigrants still live in the U.S. [13]. Yet, the recession underscored the vital role of immigrants in economic recovery, increasing support for expanding access to high-skilled labor and recognizing immigrants' contributions as entrepreneurs and

innovators. The change in perspective, along with demographic shifts, has heightened awareness of the immigration system's flaws while also recognizing the positive impact of immigrants [7].

In each of their campaigns or terms, the current and past three U.S. presidents have proposed reforms in the following areas: border security, legal citizenship and paths to citizenship for the undocumented, the economy and employer accountability, diversity and assimilation, and families. Below, these are discussed in categories as Border security, Economic impacts, and Integration and social issues. Public perceptions are also discussed, as these affect and are affected by partisan politics and proposed or enacted policies.

3.1 Border security

For decades, border security has concentrated on preventing terrorism, arms smuggling, and drug and human trafficking. Each of these threats involves crossing borders, so an effective border management system has become essential for safeguarding citizens [14]. Border systems must rapidly identify new arrivals, screen for security risks and protection needs, and direct cases into appropriate procedures. They must also handle asylum procedures, relocate certain cases, and meet immediate humanitarian needs [15]. In addition, governments also face the challenge of securing borders while managing the flow of people and goods due to globalization and free trade, outside the realm of immigration.

Borders are inherently porous, however, and increased cross-border activities necessitate greater cooperation and collaboration in security policies. National borders are critical points through which the public perceives and judges migration trends and policies. High arrivals at official ports of entry and irregular crossings strain border authorities, while media coverage of migrant caravans and violent apprehensions highlights the chaos at borders like those of the U.S. and the European Union (EU) [15]. With consistent numbers of noncitizen apprehensions and expulsions ranging from half a million to over two million, border security continues to be a concern for both parties [10].

It is not surprising, then, that all four U.S. presidents over the last two decades have included border security as a top priority for immigration reform. Before 9/11, the Bush campaign asserted that if elected, he would aim to create a "special relationship" with Mexico, focusing on immigration reform to allow more Mexican workers into the U.S. and providing legal paths to citizenship. Bush faced significant opposition from his own Republican Party, however, which opposed guest worker and legalization policies. They viewed his proposals as amnesty [16]. Post-9/11 in his State of the Union address, Bush called border security "an urgent requirement of our national security." He discussed his deployment of the National Guard to the border and investment in border infrastructure including vehicle barriers, checkpoints, and lighting, to prevent illegal entry. He focused on ending what he called the "catch and release policy" for "illegal aliens" and expanding the use of "expedited removal" [17].

In a Fact Sheet released in January 2013, Obama argued that the immigration system was "broken" and proposed "commonsense immigration reform." His proposal aimed to enhance border security by improving infrastructure at entry points, fostering public-private partnerships, and utilizing advanced technologies, much like that proposed by Bush. It claimed stricter penalties for transnational crimes, including drug and human trafficking, strengthening collaboration with border communities and law enforcement and deporting convicted criminals while protecting

those with credible fears [18]. Both Bush and Obama saw a modicum of success, with apprehensions decreasing during each of their terms (see **Table 1**). In fact, in 2017, Robert Warren of the Center for Migration Studies argued that “the era of large-scale undocumented population growth has ended, and that there is a need to reform the US legal immigration system to preserve and extend these gains” [19].

In May 2019, Trump addressed the American populace with “an immigration plan that will turn America’s broken immigration system from a source of national division into a point of pride and national unity.” It set to establish a self-financing border security fund, supported by fees and revenues from ports of entry, to guarantee law enforcement officers have the necessary resources without waiting for Congressional approval. It also ensured thorough inspection of all individuals and goods entering the U.S. at ports of entry and it expedited the construction of barriers in key areas. Trump, however, did not enact a self-financing border security fund. Instead, in 2019 and 2020, he diverted funds from other sources, such as the Pentagon and the Treasury Forfeiture Fund, to finance border security measures [20, 21]. Still, apprehension numbers fluctuated across his term. Jessica Bolter, an associate policy analyst at the Migration Policy Institute, noted that apprehensions significantly dropped in the months following Trump’s inauguration, a phenomenon dubbed the “Trump Effect.” An unprecedented record low in April 2017 was noted in Customs and Border Protection data, something that had not been seen since 2000. However, the numbers began to rise again in late 2017 and early 2018 [22].

In response to the Trump-era actions, President Biden proposed immigration reform “to restore humanity and American values to our immigration system” in 2021 [23]. Regarding border security, it sought to allocate additional funds for technology and infrastructure improvements, such as scanning technologies at all entry points to detect narcotics and contraband, and financial support for training programs and ongoing education to enhance the safety and professionalism of agents and officers. It targeted prosecution of smuggling networks and expansion of anti-gang task forces in Central America. Yet, despite efforts to pass comprehensive legislation, as of 2024, efforts have failed to advance a bill in Congress, including the recent Emergency National Security Supplemental Appropriations Act. While the most recent immigration numbers are not yet available, border apprehensions and expulsions increased dramatically in 2022 (see **Table 1**). According to Chishti and Bush-Joseph of the Migration Policy Institute (2023), “this border surge may have been partly prompted by the administration’s actions elsewhere to shield immigrants from deportation and provide humanitarian protections, as migrants expected a warm welcome in the United States after four years of Trump. Biden’s ambitious immigration agenda, therefore, may have contributed to one of his most vexing policy challenges” [24].

3.2 Economic impacts

Economists point to the potential positive net effect of immigration for both immigrants and the host country. Immigration increases labor resources, boosting the economy’s productive capacity. The income benefit to natives in the destination country is termed the “immigration surplus,” which is larger when there are more immigrants and greater wage decreases. Economists estimate annual economic gains to native-born Americans between 0.1% and 0.3% of gross domestic product (GDP) or about \$54 billion a year due to immigration. However, the distribution is uneven [25].

The traditional labor supply and demand model of immigration suggests that there are beneficiaries—immigrants, the companies that employ them, and

native-born workers whose skills complement those of immigrants—and there are those who may be disadvantaged—native-born workers who compete directly with immigrants for jobs. Evidence suggests that the negative impact is particularly harsh for black workers with low education and Hispanic workers who have not completed high school and have limited English skills. Additionally, earlier groups of low-skilled immigrants without a high school diploma experience greater negative effects compared to other low-skilled workers. In more advanced theoretical models, the effect of immigration on wages depends on various factors, including differences in worker skills, the rate at which capital adjusts, how firms adapt their production technologies, labor laws, enforcement policies, the overall economic health, the mix of outputs, and the specific time period being analyzed [25–27].

Immigrants increase job competition but also create jobs by starting businesses, positively affecting the economy. Moreover, immigrants are 80% more likely to become entrepreneurs than native workers, contributing significantly to job creation. Immigrant-founded firms often pay similar or higher wages compared to native-founded firms and are responsible for a substantial portion of patents [28]. In housing markets, evidence shows that immigration increases demand, leading to higher housing prices. However, immigration tends to lower prices for certain services heavily used by immigrants, like childcare and landscaping. Immigrants also enhance local product variety by introducing new goods and services. Additionally, immigration can boost international trade and financial investment by improving cross-country information flows [25]. Reduced immigration not only results in higher wages for low-skilled workers but also causes higher consumer prices and lower overall consumption [29].

After the 2009 recession, U.S. employers raised wages to attract workers for low-skilled jobs, but by then, the immigrant labor force had diminished. This led to a labor shortage, especially evident after 2014 and after the pandemic in 2020, contributing to higher inflation. The decline in low-skilled immigration and the resulting wage increases for low-skilled jobs led some young U.S. workers to skip college. This reversed a 40-year trend of pursuing higher education for better-paying careers. Then, in 2022 and 2023, the U.S. saw a significant increase in net international migration, surpassing pre-pandemic levels and reaching up to 3 million individuals. The influx of immigrant workers helped alleviate labor shortages and reduced job vacancy rates, particularly in industries like leisure and hospitality. Increased immigration also contributed to slower wage growth in sectors with high immigrant employment, such as construction and manufacturing. Currently, foreign-born workers make up over 19% of the U.S. workforce. This number includes both legal and undocumented immigrants [30].

Each of the U.S. presidents in the past two decades approached the economy in different ways. For example, in his State of the Union proposed immigration reform, Bush advocated for a revised temporary worker program to allow foreign workers to fill jobs that Americans were not taking. The number of guest workers allowed would vary with economic conditions, increasing during economic booms and decreasing during downturns; those who overstayed their visas would be barred from obtaining citizenship [17]. Yet, Bush's policy was never fully realized. Later, Obama argued that providing a pathway to citizenship for over 11 million undocumented residents would stimulate economic growth as they pursue education, secure employment, and contribute to the tax system. He achieved some success with the Deferred Action for Childhood Arrivals (DACA) program but overall labor force participation declined [31, 32]. When Trump's approach to economic impacts was to promote a merit-based program for legal immigration, skills, achievement, and potential contribution to the U.S. were considered paramount for entry. He aimed to protect American jobs

and wages [22]. Finally, Biden discussed economic growth in his proposed immigration reform, advocating for the Distressed Area Recompete Program, which seeks to reduce ongoing economic hardship and promote sustained, thorough economic growth and job creation in various geographically and economically challenged communities nationwide. In the Fiscal Year (FY) 2023 Omnibus Appropriations Bill, Congress allocated \$200 million to the Economic Development Administration (EDA) for the program, which is part of the \$1 billion authorized by the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022 [33]. The program is set to encourage higher wages for high-skilled non-immigrant visas to avoid unfair competition with American workers [34].

3.3 Integration and social issues

Immigrants often face difficulties maintaining their social customs and adapting to new cultural norms in the U.S. Individual characteristics, such as the proportion of life spent in the U.S., education level, and immigration status, significantly influence acculturation outcomes. Those with more time in the U.S., higher education, and who are closer to citizenship tend to adopt U.S. cultures more fully [35]. Although many immigrants, particularly those from Latin America, begin with fewer economic and educational advantages compared to past immigrant groups, they have generally achieved significant progress across various economic and social metrics over generations. By the third generation, descendants of immigrants often match or surpass the average American in English proficiency, education levels, patriotism, and other fundamental American values [1]. Policies can directly require or restrict customs and indirectly shape community climates, influencing social interactions and opportunities [35].

Over the past decade, family connections have accounted for about 75% of legal permanent immigration to the U.S., with additional contributions from “lottery visas” and other channels. This influx has grown the foreign-born population to over 51 million, making up 15% + of the total U.S. population [36]. Including the children of immigrants, this group represents over 25% of the population. However, there are notable disparities among immigrants, with those from Latin America and Asia making up the majority. Mexican and Central American immigrants typically have lower educational levels and work manual labor jobs, while immigrants from China, India, Korea, and the Philippines often have higher educational credentials [37]. Moreover, each year, the number of foreign nationals applying for Legal Permanent Resident (LPR) status through family-sponsored categories surpasses the available legal immigrant visas due to numerical limits set by the INA. This has led to a visa queue of approved immigrants waiting for visas. The queue includes over 4 million people. Still, debates over the appropriate level of annual permanent immigration often focus on family-based immigration. Advocates for increasing family-based immigration highlight the long wait times for approved immigrants separated from their U.S.-based families. Conversely, some argue against reuniting extended immigrant families and suggest reducing permanent immigration by eliminating certain family-based categories [38].

For over 50 years, federally funded programs have been required to ensure that individuals with limited English proficiency (LEP) can access public services and information. This requirement has become increasingly crucial due to the growing and widespread immigrant and LEP populations in the U.S. The COVID-19 pandemic highlighted significant compliance gaps, emphasizing the need for language access to prevent harm and disparities. Federal civil rights laws mandate that recipients of

federal funding provide language access, impacting various sectors, including state and local governments, for-profit companies, and community organizations. Despite these long-standing requirements, practical challenges and federal-level implementation failures have hindered progress [39]. Immigration salience affects the use of resources and services, as immigrants and those perceived to be immigrants, can be wary of police, healthcare, and sometimes education if the nature of personal information (private or shared) is unclear [40].

Leadership acknowledges the social impacts of immigration on Americans and on immigrants. Bush supported assimilation to American ideals and cultural norms, such as civic responsibility, historical appreciation, tolerance, and equality. He established the President's Task Force on New Americans, bringing together various federal agencies to support initiatives like English and civics education, and to foster public-private partnerships [41]. Obama proposed to raise the cap for family-sponsored immigration, reduce separation time between citizen and LPR relatives, and create a strategy for immigrant integration. He also established a White House Task Force on New Americans that launched several initiatives to promote economic, civic, and linguistic integration [42]. Trump advocated support for immigrants prepared to assimilate into America's diverse culture, prioritizing younger applicants who are expected to establish lasting connections and contribute significantly to society throughout their lives. He argued that prospective green card holders should first pass a U.S. civics test and show proficiency in English. He also focused on immediate family members for family unification [43]. Biden proposed reforming the family-based system to address backlogs, reduce wait times, and eliminate barriers to reunification, also supporting LGBTQ+ (lesbian, gay, bisexual, transgender, queer/questioning, plus (others)) families. He also recommended new funding to various organizations to enhance programs for integration, English-language instruction, and citizenship assistance [34]. Despite the intent of each successive administration regarding immigration, each still faces seemingly overwhelming legislative hurdles.

3.4 Public perceptions

In most countries, immigration is a contentious issue. Some people oppose it because they fear immigrants will compete for jobs or increase their tax burden. They might believe that immigrants take jobs, receive more public assistance than they contribute via taxes, occupy university spots that could go to native-born students, and commit numerous crimes. Although these beliefs are not always accurate, they are still widely held. Additionally, there are concerns that immigration might alter the country's culture, including language and shared values. The latter has been the case for some throughout U.S. history; with each migration wave, some fear the potential change due to large immigrant populations. People's attitudes toward immigration can also be influenced by whether they know any immigrants and their experiences with them [25]. Immigration attitudes are notably stable and resistant to change, even during economic and political upheavals. Aligning with political socialization theories, younger people are more likely to alter their views on immigration compared to older adults. Prior studies show that ideology, party affiliation, political interest, and other fundamental political preferences are generally very stable [44].

Public support for immigration policies is complex due to the multifaceted nature of immigration and the numerous variables influencing citizens' opinions [45]. Demographic factors, such as age, marital status, and income, also influence support for immigration policies. Older individuals are less likely to support policies separating

children from parents, married people oppose policies preventing refugees, and low-income earners show more favorable attitudes toward immigration than high-income earners. This challenges the rhetoric that economic competition drives anti-immigration sentiments among the poor and uneducated [2]. However, a recent study has found that an increase in low-skilled immigrants generally pushes voters toward the Republican Party, especially in non-urban, low-skilled counties with high public spending. Conversely, urban, high-skilled counties tend to shift toward the Democratic Party in response to high-skilled immigration. This differential response contributes to political polarization, with low-skilled immigration driving Republican support in less-educated areas and high-skilled immigration bolstering Democratic support in urban areas [46].

According to recent Pew Research Center reports, approximately 57% of Americans believe that addressing immigration should be a primary focus for the president and Congress in the current year. This shift is largely driven by a rise in concern among Republicans, with 76% now considering immigration a top priority, up from 39% in 2021; the percentage of Democrats who view immigration as a priority (now 39%) has remained relatively constant since 2021 [47]. Immigration attitudes leading up to the 2024 election show a majority of Americans (59%) are in favor of paths for undocumented immigrants to remain in country; however, this varies widely by political party affiliation, with Republicans (right-leaning) favoring deportation (66%) and Democrats (left-leaning) (83%) favoring the means to stay when certain requirements are met [45].

It is important to emphasize here the intersection of public perceptions and politics. Public attitudes toward immigration are deeply polarized along party lines and this polarization often shapes party platforms and policy proposals. For example, the Trump administration took a restrictive stance on immigration policy, reflecting the concerns of his voter base about illegal immigration and national security, while the Biden administration sought to reverse many of Trump's orders, aiming to create a more humane and efficient immigration system [46]. Leadership rhetoric and subsequent media coverage play a crucial role in shaping public perceptions of immigration. Studies show that exposure to news on immigration can polarize attitudes further [48].

4. Policy considerations

Each of these issues requires policy considerations from both sides of the political aisle. Effective border security policies must consider human activities and broader social processes, such as market forces and regional culture. Policymakers must gain a deeper insight into the various policies and activities of different government levels and agencies that are applied locally on both sides of the border [49]. Border management requires adaptable processes that can scale up or down quickly, robust coordination among stakeholders, and routine monitoring to identify and address gaps. Differentiated procedures for various case profiles and rapid screening are essential to prevent backlogs and ensure efficient processing. As states and international organizations enhance early access to asylum and experiment with relocating asylum systems outside their territories, border processes must be upgraded to ensure territorial asylum remains an option for those in need. Despite efforts to create lawful migration pathways, mixed migration at borders will persist. Policymakers face the challenge of designing border systems that prevent chaos amid major displacement crises and complex migration patterns [15].

Further research is required to understand the fiscal effects of immigration in the U.S. State and local governments face the most significant financial burden from low-skilled immigration, as they primarily finance public education and various public assistance programs. Although unauthorized immigrants do incur costs for taxpayers, their fiscal impact is less than that of low-skilled legal immigrants because they are not eligible for most government transfer programs [26]. Immigration as a whole, however, tends to benefit the economy; thus, policymakers must use current economic data to make profitable and humane decisions.

To address issues of integration, more advanced strategies are needed to support state and local programs effectively. These include integrating stronger planning and reporting requirements into routine processes, providing specialized guidance, and expanding resources for technical assistance. Additionally, a centralized coordination effort, possibly led by the Department of Justice, is necessary to enhance efficiency and effectiveness across federal programs. Implementing these recommendations would strengthen federal infrastructure, support state and local entities, and ultimately improve access to critical services and information for LEP communities [39].

Overall, leaders must be willing to address each of these factors based on data and expert analysis, current knowledge of and cooperation with bordering nations and territories, updates on world crises, and a strong sense of the American values of freedom and diversity. While acknowledging that unrestricted immigration could harm the economic well-being of the host country and its democratic governance, without benefiting the immigrants, citizens and their representatives can still demand that those advocating for immigration restrictions provide evidence of the potential negative impacts at different levels [50].

5. Conclusion

Immigration in the U.S. is multifaceted, deeply rooted in the nation's history, and significantly influenced by political partisanship. Over the past several decades, immigration has not only reshaped the demographic landscape of the country, but has also become a central topic in political discourse. Despite numerous attempts at comprehensive reform by successive administrations over the past 20+ years, partisan divisions have consistently hindered the passage of significant legislation. The fluctuating policies and enforcement measures reflect the broader socio-political dynamics and the ongoing struggle to balance security, economic needs, and humanitarian considerations. Understanding the dynamics of immigration, as well as the effects of political rhetoric and public perceptions, is crucial for developing policies that are both humane and efficient.

Conflict of interest

The author declares no conflict of interest.

Notes/thanks/other declarations

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Chapter 4

Population Dynamics and Community Planning in Fragile Areas of Jariban District, Somalia

Wonder Mafuta

Abstract

The chapter examines the importance of population dynamics in community Water, Sanitation and Hygiene (WASH) planning. This study's population data for each village is based on the 2019 village registers. Social demographic data was collected using a comprehensive household survey in which structured questionnaires were administered to 167 community members in the Jariban district. The quantitative demographic data was subjected to descriptive statistics, regression, predictive and trend analysis. The segregation of men's and women's numbers is critical in planning services and predicting localised population growth, whereas gradual population growth has worked well for estimating populations at the provincial and national levels, estimating populations at the village level (for the year to come) in fragile contexts should be done using predictive equations. Population growth rates at a national scale may misrepresent that growth is linear when, in fact, many factors, such as disaster-induced migration, result in some villages losing population and others gaining exponentially. We should ascertain how droughts, wars, searching for pastures, water availability and security significantly contribute to population growth in each studied village. Furthermore, more studies should investigate whether village population estimates align with the national population estimates of 3% currently used by the World Population Review.

Keywords: population growth, predictive analysis, demographic data, fragile contexts, decision-making, community planning, Somalia

1. Introduction

As the world gears for continued focus and planning to achieve the sustainable development goals (SDGs), partners and governments are working towards strengthening national WASH planning, investments and accountability mechanisms to improve service delivery. Planning for Water, Sanitation and Hygiene (WASH) service delivery is essential to enable a sustainable development approach and reduce polarity among social groups within each community. There is a need to create an enabling environment between different gender groups to allow different social groups to contribute ideas during WASH planning. Once one group feels restricted,

that can generate polarity extending from planning to delivery of WASH services. Polarity can also occur when one social group feels available WASH resources are biased [1]. In fragile contexts, there is a need to comprehend the population dynamics better so that the demographic characteristics can be applied when planning for WASH. In fragile contexts like Somalia, conducting a census is a challenge due to limited funding, competing for priorities to serve lives, inaccessibility of some sites due to security risk and possibly the friction between different states [2–4].

Population trends vary significantly across regions. Several factors contribute to population acceleration and deceleration, including different fertility levels, international migration and mortality [5]. Emerging pandemics like COVID disrupt population growth trends at local and global levels [6]. The climate change effect is also accelerating or decelerating the population. In the US, flooding events resulted in a nonlinear population increase [7]. Understanding population dynamics is also important because it helps in predicting carbon emissions, since it relatively results in carbon emissions. Estimating population trajectories remains essential, and the study sought to find ways to estimate populations at a localised level.

The chapter examines how population dynamics determine community WASH planning in fragile areas, particularly at the village level. There have been population estimates in Somalia since 1975 [8]. The population estimates established in 1975 forecast subsequent year's population at a growth rate of approximately 3% [9]. Somalia has not had a census due to access challenges, lack of financial resources, wars and friction between the State and Federal governments [4, 10]. Population prediction had been at district, regional and national levels, and no estimates for the year to come had been made at the village level. However, village registers have both the host population and displaced people living on the peripher-als. The population numbers are regularly updated as village leadership always vet people to understand the origin of migrants and establish reasons why they settle in their villages.

2. Methodology

Each household questionnaire had a consent section, allowing participants to express consent to administer. The University of Venda approved the ethical clearance for the research under project number SARDF/20/IRD/02/0704. The Ministry of Planning, Economic Development and International Cooperation in the Puntland State of Somalia issued the research approval letter (MoPEDIC 067/02/20). The village leaders provided verbal consent for village participants.

The study was conducted in the Jariban district of Puntland State in Somalia. The Puntland State of Somalia has remained unstable due to the activities of localised clan conflicts. Due to the prolonged drought and localised conflicts, approximately 130,000 people were internally displaced in 2015 [11]. Jariban district, in particular, was, until recently, a stronghold of pirates. The latter situation hampers recovery efforts and leaves most people with limited access to essential services (**Figure 1**).

Social demographic data was collected using a comprehensive household survey in which structured questionnaires were administered among the sampled 167 community members of the Jariban district. The quantitative data collection was assisted by using the Open Data Kit (ODK) platform with Global Positioning System (GPS) to support the geo-referencing of survey locations. Open Data Kit (ODK) is a free and

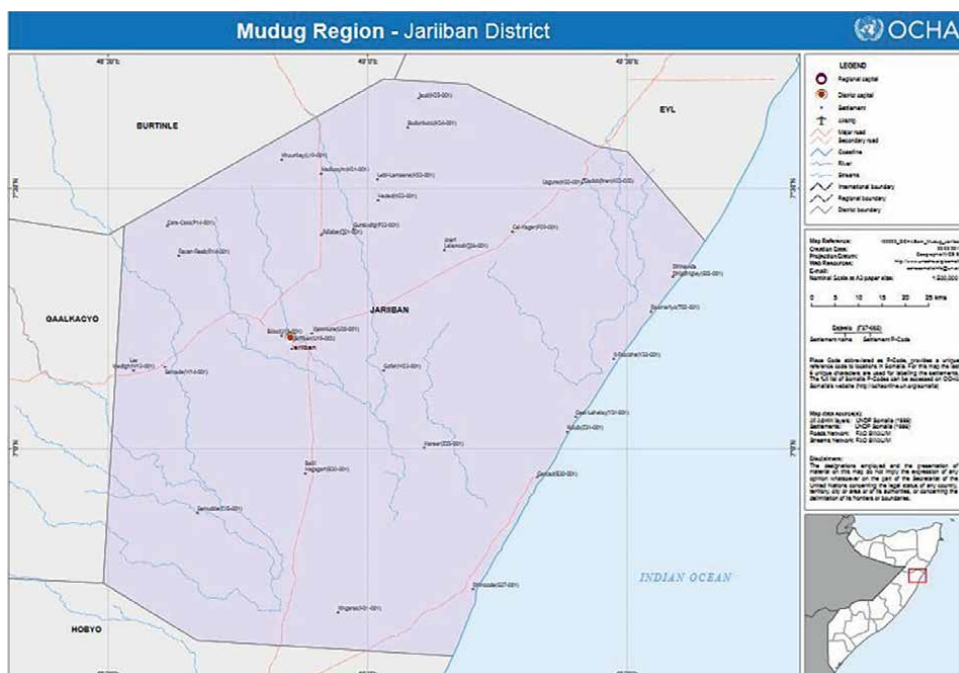


Figure 1.
 Map of Jariban district.

open-source set of tools that helps authorise and seamlessly manage the field data collection process. The quantitative demographic data was then subjected to descriptive statistics, regression and horizontal analysis. Population data for each village was based on the 2019 village registers. The village registers are the most reliable population data source for Somalia. UN agencies and national and international organisations use them for planning services and other humanitarian assistance.

3. Results

The population was segregated into boys (males below 18 years), men (males above 18 years), girls (females below 18 years) and women (females above 18 years). The village registers data for 2019 show that the study area's population comprised 22.8% females, 19.3% males, 26.2% boys and 31.7% girls, as shown in **Figure 2**.

Balibusile had the highest population, while Caracaso had the lowest, representing 25% and 7% of the total population. Of the 167 respondents (household survey), 96.6% were females and 3.4% were males. The Focus Group Discussions (FGD) gathered the community perspectives on WASH service delivery in 2019 and how the needs could be addressed. Thirty-eight FGDs were conducted (two per village). The participants for the 38 FGDs are segregated, as shown in **Figure 3**.

Whereas the instruction was made that all social groups within the community had to be represented, it came out that men dominated in numbers in the FGDs. When the numbers for each village were segregated, it came out that only Booc village had more women than men. In Seemade, Hayaanle, Dhobocantuug and Dhinowda villages, no girls participated. The culture of gender impartiality is

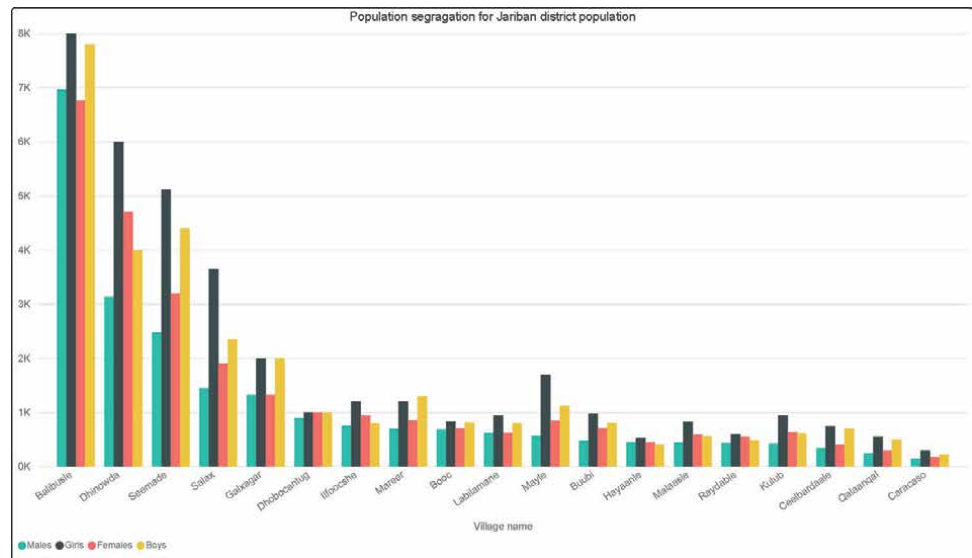


Figure 2.
Population segregation in 19 target villages.

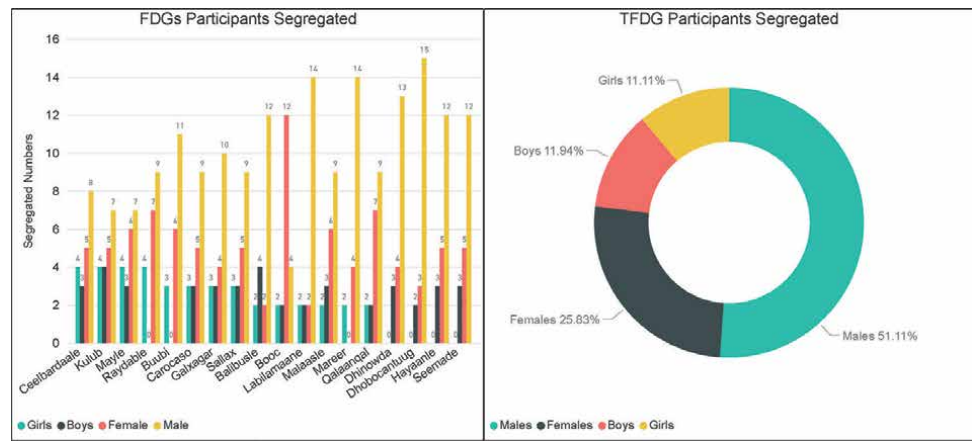


Figure 3.
Segregated FGD participants.

dominant at all ages; men (51.11%) dominate women (25.83%). On the same note, boys (11.94%) dominate girls (11.11%) in FGD representation. In terms of population numbers, it came out that women constitute 22.83% of the population and men 19.28% of the population. However, when asked to select representatives to make decisions on WASH issues in their villages, only 25.83% of women and 51.11% of men were involved.

Once the population numbers were collected from the village registers, estimates for the coming years were conducted. The author compared how village population growth is estimated using a fixed annual growth rate of 3% or regression and predictive equations [9]. The future population numbers had to be estimated since the

Correlations				
	Total population	Number of males	Number of females	Total households
Total population	1	.981**	.994**	.992**
Number of males	.981**	1	.975**	.996**
Number of females	.994**	.975**	1	.986**
Total households	.992**	.996**	.986**	1
Coefficients				
Model	Unstandardised coefficients		t	Sig
	β	Std. error		
(Constant)	178.239	205.308	.868	.399
Number of males	−1.412	1.148	−1.230	.238
Number of females	2.201	.597	3.685	.002
Total households	4.987	2.116	2.357	.032

***Correlation is significant at the 0.01 level (2-tailed).
 Dependent variable: total population.*

Table 1.
Correlations and coefficients for building the predictive equation.

number of people also determines the investment needed in an area and the ultimate service delivery. Correlations and regression analysis were conducted on variables to develop a predictive equation: total households, number of males and number of females. Analysis results show that there is a significant relationship between numbers of males (.981), females (.994) and total households (.992) in predicting future population (**Table 1**).

Despite a negative coefficient between the number of males and the total population, the other two variables, the number of females and total households, were significant, thus allowing a more likely predictive equation. The coefficients were used to derive a predictive equation. The prediction equation for estimating population numbers for the coming year is derived from the following formula;

Prediction of the village population:

$$\begin{aligned} \text{Village population} = & -1.412(\text{males}) + 2.201(\text{females}) \\ & + 4.987(\text{total households}) + 178.239 \end{aligned} \quad (1)$$

The predictive equation was then used to estimate the futuristic population for the coming year (2020), as shown in **Table 2**.

The population numbers estimated using the two methods were subjected to horizontal trend analysis, as shown in **Figure 4**.

The percentages in trend analysis show that the 2020 estimated population (using predictive equations) was to increase in most villages except for Salax, Ceelbardaale, Seemade, Booc and Mayle where the population numbers would likely reduce. However, when using the annual growth rate of 3%, all villages would have an increased population, which is unrealistic in a fragile context.

Village name	2019 population	Estimated population in 2020 using a 3% growth rate (World Population Review)	Estimated population in 2020 using predictive equation
Malaasle	2424	2497	2892
Qalaanqal	1600	1648	1482
Raydable	2072	2134	2254
Salax	9352	9633	8972
Balibusle	29,538	30,424	29,787
Buubi	2975	3064	3197
Ceelbardaale	2200	2266	1972
Seemade	15,200	15,656	13,195
Booc	3040	3131	2662
Mareer	4060	4182	3975
Kulub	2625	2704	2861
Dhinowda	17,850	18,386	18,828
Ilfoocshe	3710	3821	3839
Galxagar	6660	6860	6764
Dhobocantug	3900	4017	4350
Labilamane	3000	3090	3165
Mayle	4240	4367	3887
Caracaso	840	865	989
Hayaanle	1860	1916	2079

Table 2.
Comparisons of population calculated through 3% growth rate and predictive equations.

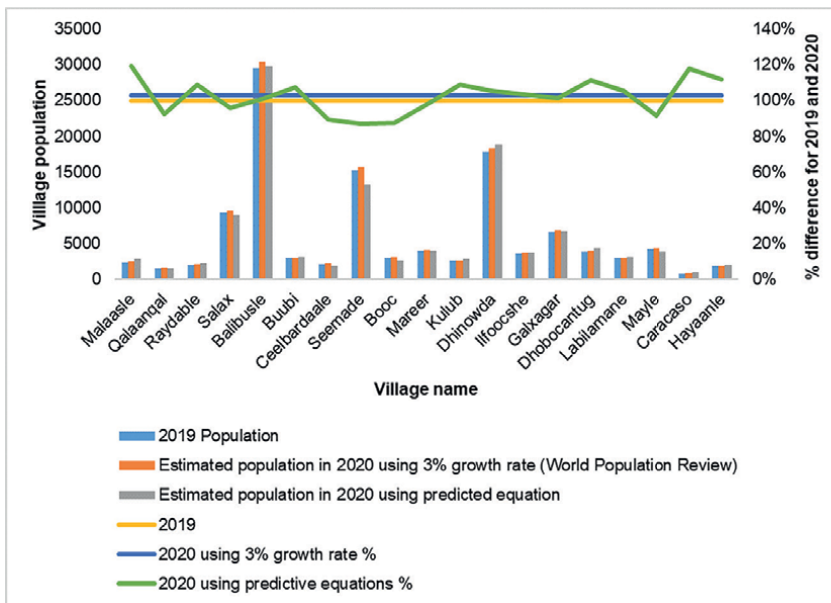


Figure 4.
Horizontal analysis of population numbers using the two methods.

4. Discussions

Balibusile has three boreholes, and this may explain why it has the highest population numbers since the concentration of population in the village is attributed to the services it provides to the people and the effects of drought have been noted to influence this pattern and demonstrated in earlier studies [1, 12, 13]. The vast disparity is surprising in a community, such as Jariban; hence, I explored possible explanations. The low number of males could result from the call for men to training camps as they prepare for continued clan conflicts and battles. Previous studies have noted that men from poor, landless, low-income households are more likely to migrate [14]. The prevalence of female-headed households could result from men migrating to the diaspora to look for employment, as noted in an earlier study by Sunata and Abdulla [15]. Some men could have migrated for several months with their livestock to look for pastures, as Somalis are primarily pastoralists. Unlike in earlier studies where males dominate females in decision-making [16, 17], females dominate males. However, further explorations showed that women are more influential than males when making decisions in private spaces. The finding of male dominance is confirmed by earlier studies, which noted that Somalia is a patriarchal society where males dominate females in social, religious and economic fields [17–19]. Recent studies have also indicated that stigmatisation towards women and girls is rife [18–21].

In fragile contexts, where determinants of population growth are complex to ascertain, population estimates could be convenient but also bring the risk of under or over-budgeting for service delivery. In America, population growth has been in line with geometrical progression; this represented the rate of increase to be expected under conditions of land abundance until all the good land has been occupied and only marginal soils would remain [3]. It should be noted that growth in a fragile context is regardless of abundant or fruitful land. As such, population growth is not only influenced by the prevalence of peace and access to resources.

Gradual population growth at the village level is, therefore, unrealistic. Early studies noted that a 1% point increase in Gross Domestic Product per capita growth over 10 years increases countries' population growth by around 0.1 percentage points [22]. However, predicted population numbers show that GDP and the available number of households, males and females, can influence population increase or decrease. Population growth can be either exponential or hyperbolic [23].

Whereas the population may grow slowly over time, in fragile contexts, the risks, such as fighting and drought, may result in a sudden increase or decrease in population for any village. Migration inflow or outflow also regulates the number of people in communities, resulting in a sudden increase or decrease [24]. When WASH services are planned, it is crucial to project a sudden increase in service delivery rather than only preparing for the available population numbers. Population numbers of Arab countries have been growing as a result of both natural growth and migration [25]. The movement in Arab countries, which have similar religious, social, physical and climatic conditions to Somalia, requires further investigation, especially regarding migration flows [26]. Reducing child mortality and general improvements in health have contributed to population growth [27].

The population changes, as shown from the predictive equations, indicate displacements that are rife in fragile areas. Reasons for movement in Somalia include food insecurity, water stress and scarcity, slow and sudden-onset disasters, violence and conflict, among other things [28]. Depending on the type, severity and scale of crises, it came up that some villages in the Jariban district had more population

concentration than others. Displacement numbers and flows are supposed to be considered when service delivery planning is conducted. If current or anticipated migration flows are not factored in, available resources can be exploited at a faster rate than would have been anticipated during planning. The concentration of populations could also present resource distribution inequality between locations [1, 14]. A study by Sunata and Abdulla [15] noted that the availability of education, water and food services attracts people to an area. Globally, in 2015, 247 million migrants had left their homes for another country [29]. The movement of people then depends on the foreign policy strategy between the receiving and sending countries. In the Mediterranean alone, more than 76,000 migrants and refugees made their way to Europe in the first 6 weeks of 2016—nearly 10 times more than the previous year [15, 29].

5. Conclusions and recommendations

The chapter examines the importance of understanding population dynamics in community WASH planning. During private involvement (household surveys), women dominate men. This reflects that women are custodians of development and emergency service provisions. In fragile contexts, more women should participate in WASH planning because they spend more time with children. Men dominate in numbers at public platforms (such as FGDs). Therefore, including men's and women's numbers is critical in planning services and predicting localised population growth. Whereas gradual population growth has worked well for estimating populations at the provincial and national levels, estimating populations at the village level (for the year to come) in fragile contexts should be done using predictive equations rather than population growth rates. It also came out that growth is not only influenced by the prevalence of peace and access to resources. Population growth rates at a national scale may misrepresent that growth is linear when, in fact, many factors, such as disaster-induced migration, result in some villages losing population and others gaining exponentially. The localised population estimation likely provides realistic numbers that can be used for WASH service provision.

It is recommended that we ascertain how droughts, wars, searching for pastures, water availability and security significantly contribute to population growth in each studied village. Furthermore, more studies should investigate if village population estimates align with national population estimates of 3% currently used by the World Population Review. It further recommended that, when planning for WASH, there is a need to consider the varied life spans, development index and mortality rates. The movement in Arab countries, which have similar religious, social, physical and climatic conditions to Somalia, requires further investigation, especially regarding migration flows.

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Racial Disparities in Labour Market Outcomes between Immigrants and South African-Born Women: Evidence from the 2011 Census

Emmanuel Souza

Abstract

The chapter examines disparities in women's labour market outcomes based on race and nativity in South Africa by employing multinomial logit models on the 2011 Census data. Findings highlight labour market disadvantages experienced by black women in South Africa, particularly among foreign-born nationals, highlighting how the intersection between race and nativity impedes the success of black immigrants. Overall, black women predominantly occupy low-skilled occupations, mostly in the informal sector and private households, consequently earning significantly less than their white counterparts. However, as immigrant women spend more time in South Africa, their likelihood of working in private households declines gradually, and their income attainment improves significantly. Furthermore, returns to post-secondary education are higher for black than white women, regardless of their nativity status. The implications of these results are discussed with respect to policy considerations.

Keywords: immigrant incorporation, labour market, South Africa, intersectionality, race, nativity

1. Introduction

Historically, South Africa has served as a primary destination for regional migrants in sub-Saharan Africa (SSA), a trend that continues today. However, migration patterns have shifted significantly over the decades. Initially, dominated by white Europeans until the mid-1980s, contemporary migration now predominantly involves black individuals from within the region [1]. Moreover, earlier migration was predominantly a male phenomenon, facilitated by a gendered labour system during apartheid, with men from Lesotho, Mozambique, and rural South Africa working in mines [2]. Following global trends, female migration has surged in recent decades, dominating migration research in South Africa [3–5]. African women increasingly engage in independent cross-regional movements driven by economic motives [6, 7].

Despite South Africa being a key destination for immigrants and witnessing a rise in female migration, there remains a gap in understanding the experiences of immigrant women in the South African labour market. While some progress has been made in documenting the labour market experiences of immigrants in South Africa [8–10], research specifically focused on immigrant women is deficient. It is crucial to compare their labour market outcomes to those of native-born populations. Existing studies have narrowly examined their labour force participation and employment outcomes [11] and that of accompanying spouses [12]. But, for a comprehensive understanding of women's integration experiences, it is essential to include other outcomes such as occupation and income, which are better indicators of immigrants' labour market incorporation.

Furthermore, the South African context lacks research on the intersectionality between race and nativity. The intersectionality framework suggests that multiple social structures intersect to shape disparate socioeconomic outcomes [13, 14]. Given the significant labour market disparities based on race in South Africa, it is unclear how race and nativity together influence immigrants' labour market outcomes. While Ref. [8] analysed whether immigrants outperform locals as commonly perceived, their study did not shed light on race- and gender-specific experiences, as their sample was not stratified accordingly.

This study explores how theories of immigrant incorporation, formerly developed for South-North migration, explain the integration of immigrant women in South Africa, considering its unique context. Specifically, it evaluates whether immigrant women in South Africa follow a classical or segmented incorporation pattern. Using the 2011 Census data, the study examines the economic experiences of women in South Africa, starting with the employment sector, given its significance in developing contexts, and then occupation and income attainment, while controlling for the former, with South African-born (SAB) women as the reference group. To provide a comprehensive perspective, the dichotomous measure of the employment sector is expanded to include private households—an occupational niche that holds particular significance for black women in South Africa, which emerged during the apartheid era as a result of intricate class, gender, and race dynamics [15]. Due to small immigrant sample sizes from other racial groups, the focus is on black and white women.

2. Theoretical background

This study is guided by the (structural) intersectionality framework from the sociology literature [13, 14, 16]. Intersectional approaches highlight how multiple social structures simultaneously determine social outcomes and identities [14, 17]. While typically focused on gender, race, and social class, this framework has been extended to encompass other categories such as nativity [18, 19]. The intersection of race and nativity in South Africa, a country with a long history of racial discrimination, particularly against the black population, has hardly been explored. The repercussions of apartheid persist, and native-born individuals often blame immigrants for their lack of economic opportunities, leading to xenophobic violence, particularly against African immigrants [20, 21]. Overall, research on immigrant incorporation shows that immigrants experience labour market disadvantages compared to natives, which vary by race and nationality. For example, non-white immigrants in the United States, such as Latinas, often experience compounded economic disadvantages due to the intersection of race, nativity, and gender [19, 22, 23].

Labour market disparities between immigrants and natives are explained by two theories: classical and segmented assimilation. Classical assimilation describes how immigrants adopt the cultural and social norms of the host society, traditionally focusing on the experiences of early European migrants to the United States [24, 25]. While classical assimilation was grounded in cultural convergence, contemporary interpretations use “labour market convergence” to describe the assimilation process [26]. Classical assimilation theory suggests that immigrants enhance their human capital (education, labour market experience and knowledge) over time, improving their labour market outcomes. Initial labour market disadvantages are often due to disparities in, or limited transferability of, human capital between the countries of origin and destination (see e.g., [27–29]).

On the contrary, segmented assimilation argues that, beyond individual characteristics, structural forces impede immigrant adaptation. This theory highlights two key factors: changes in the labour market structure and racial stratification within the host society [30]. First, a segmented labour market, such as an hourglass economy, undermines meaningful upward mobility [31, 32]. This aligns with the segmented labour market theory [33], where job characteristics in the primary and secondary sectors of the economy produce disparities in occupational and income attainment, with barriers impeding movement from the secondary to the primary sector, especially for immigrant groups.

Second, racial and ethnic differences influence the paths of integration [34]. In traditional migrant-receiving countries, minority immigrants who differ phenotypically from the native majority face more obstacles due to discrimination, leading to a higher risk of downward or delayed assimilation instead of a gradual integration into the native mainstream [30, 34]. This is particularly relevant in South Africa, where apartheid’s legacy continues to impact the black population, highlighting the importance of examining the interaction between race and nativity.

3. Race, immigration and labour market outcomes in South Africa

The debate surrounding race in South Africa, like in the United States, is highly contentious. The population is categorised into four racial groups, Whites, Asians/Indians, Coloureds, and (African) Blacks. The blacks constitute 81% of the population but do not enjoy higher socioeconomic status (SES), while the white minority, comprising 7% of the population, enjoys higher SES. Moreover, despite the black majority’s political ascension post-apartheid, economic challenges and discrimination, a legacy of apartheid, persist [35, 36]. Surprisingly, black workers’ labour market position worsened in the immediate aftermath of apartheid [37], despite affirmative action policies [38]. White South Africans continue to prosper economically, with the lowest unemployment rates and significantly higher incomes [39].

Coloureds, a mixed-race group comprising 8% of the population, and Asians, comprising 3%, occupy the intermediate SESs. Coloureds are closer in socioeconomic status to blacks, while Asians align more closely with whites. The SES of these racial groups appears to follow a colour bar, with whites and blacks at opposite extremes [40].

Immigration patterns in South Africa have shifted significantly during and after apartheid. While white individuals were the majority of immigrants during apartheid, black Africans now constitute the largest group. Most immigrants today come

from Lesotho, Mozambique, and Zimbabwe. Black immigration to South Africa has a long history [41, 42]. However, recent policy changes, such as the 1991 Aliens Control Act and the new Immigration Act of 2002, have shifted the focus to skilled immigrants more comparable to their white counterparts [43].

Female immigrants' labour market participation is a crucial step towards their integration into the workforce, especially in SSA where women often have subordinate household roles [44]. Data from the World Bank show that female labour force participation (FLFP) rates in SSA have been stable over the past few decades, albeit with variations among countries [45]. In South Africa, FLFP rates are lower than in other SSA countries, and the participation of immigrant women is lower than South African-born women. Thus, African-born immigrant women are 32% less likely to participate than black South African women [11]. This reinforces the fact that women experience greater labour market segmentation in the host rather than their origin country, especially in developing countries [46]. In such settings, women are more likely to work in isolated or informal and precarious jobs [11, 47, 48], such as domestic and agricultural jobs that are prone to exploitation [49]. Factors such as marriage, children, and household headship influence their participation [11, 47], over and above their ethnicity, race and migration status [50].

However, several gaps in the existing research hinder a comprehensive understanding of immigrant women's economic incorporation in South Africa. First, it is essential to explicitly include private households as a distinct sector in employment investigations, historically associated with black South African women. Second, broadening our focus to other labour markets outcomes, such as occupation and income, aligns the study with assimilation theories. Examining occupational attainment can highlight underemployment or skill underutilization, whereas income disparities are crucial for assessing the degree of incorporation because income directly affects the well-being of individuals and families. Finally, investigating how race and nativity interact to produce divergent labour market trajectories is imperative given apartheid's legacy. Addressing these gaps can provide a more comprehensive understanding of women's labour market incorporation in South Africa.

4. Data and methods

Data for this study come from the 10% individual sample of the 2011 South African census, offering comprehensive socioeconomic, demographic, and migration information. However, the cross-sectional nature of the census limits our ability to track outcome changes over time, allowing us only to compare outcomes of immigrants with different durations of residence in South Africa. Additionally, there may be significant undercounts of (undocumented) immigrants as they might evade the census. Statistics South Africa (Stats SA) mitigates this issue by conducting post-enumeration surveys (PESs) to adjust census estimates for any under- or over-counts.

The analytical sample for this study includes women aged 20–60 who were employed or self-employed before the 2011 Census. Those still attending school and individuals with missing information on the dependent variables are excluded. In this study, an immigrant is any foreign-born woman who migrated between 1990 and 2011, to ensure comparability in the labour market. Due to smaller sample sizes, for Asian and Coloured immigrants, the analysis solely focuses on black and white individuals. The final sample includes 276,708 South African women (82% black) and 14,576 immigrants (90% black).

4.1 Dependent and independent variables

To assess the economic assimilation of immigrants in South Africa, three labour market indicators are employed: employment sector, occupation, and income. The employment sector is categorised into the formal sector, the informal sector (unregistered firms or those with fewer than five employees), and private households (domestic services). Occupations are grouped into high-skill (managers, technicians, and professionals), low-skill (elementary and domestic workers), and semi-skill occupations (all other categories) based on Stats SA criteria. Income is categorised into three groups: low-income (annual income up to R38,400, excluding zero income), middle-income (R38,401–R307,000), and high-income (above R307,000).

The primary explanatory variable is a four-category interaction between race and nativity, distinguishing between South African-born (SAB) and foreign-born (FB) women of black and white racial groups. Human capital is captured by educational attainment, age (a proxy for labour market experience), and years since migration (YSM). Educational attainment is categorised as 1) less than complete secondary school (LCSS), 2) complete secondary school (CSS, reference category), and 3) college or other post-secondary education. Age and YSM are continuous variables; YSM is set to zero for SAB women and 0.5 for new arrivals with less than one year of residence. Quadratic forms of age and YSM capture potential non-linear associations. English language proficiency is included as another measure of human capital, with proficiency defined as listing English among the two most frequently spoken home languages. This definition, however, may overlook multilingual English speakers, especially among SAB black women, potentially biasing coefficients.

Control variables for geographical location (province and rural-urban status) are also included to account for conditional segregation in South Africa. Additionally, the analysis accounts for other demographic factors that influence women's employment outcomes, such as marital status and household headship.

4.2 Analytical strategy

The statistical analysis uses multinomial logistic regression for all three dependent variables, analysed through a series of models. Model 1 examines gross differences in labour market outcomes across groups. Model 2 adds controls for human capital and demographic factors to provide net differences, using SAB black women as the reference category. Model 3 incorporates interactions between the main independent variable and education to assess variations in human capital returns. Model 4 introduces an interaction between the main independent variable and YSM to explore how the length of stay in South Africa impacts labour market outcomes. Standard errors are adjusted for clustering by country of origin and magisterial district of residence.

5. Results

5.1 Descriptive statistics

Table 1 presents summary statistics for the variables used in the analysis. Overall, more women are employed in the formal sector than in non-formal sectors, with notable variations across groups. Most notably, white women have higher formal employment rates than black women. Specifically, SAB white women have the highest

	SAB black	SAB white	FB black	FB white
Labour market outcomes				
<i>Sector</i>				
Formal	.70	.85	.52	.83
Informal	.13	.08	.18	.07
Private household	.17	.08	.30	.10
<i>Occupation</i>				
Low-skilled	.40	.11	.50	.09
Semi-skilled	.36	.47	.33	.39
Skilled	.23	.42	.17	.51
<i>Income</i>				
Low	.67	.12	.82	.11
Middle	.31	.74	.16	.67
High	.02	.14	.02	.22
Human capital & demographic factors				
<i>Education</i>				
LCSS	.48	.12	.65	.10
CSS	.33	.39	.22	.26
Post-sec	.19	.49	.13	.64
YSM	—	—	5.5 (5.0)	9.4 (6.3)
English proficiency	.42	.93	.57	.93
Age	38.3 (10.2)	39.8 (10.7)	33.2 (8.2)	40.1 (10.1)
Married	.44	.71	.56	.71
Head of household	.61	.31	.54	.39
Spatial distribution				
<i>Province</i>				
Western Cape	.07	.21	.08	.30
Eastern cape	.10	.07	.03	.04
Northern Cape	.01	.02	.00	.01
Free State	.06	.06	.03	.02
KwaZulu Natal	.17	.09	.04	.10
North West	.07	.04	.05	.02
Gauteng	.33	.45	.62	.46
Mpumalanga	.09	.05	.06	.02
Limpopo	.10	.03	.09	.02
N	226,051	50,657	13,130	1446

Standard deviation in parentheses; SAB = South African-born, FB = Foreign-born.
Source: 2011 South African Census.

Table 1.
Descriptive statistics (mean/proportion) by population group, women age 20–60 (N = 291284).

proportion (85%) working in the formal sector, while FB black women have the lowest proportion (52%). FB black women also have the highest proportion working in private households (30%), while SAB white women have the lowest (8%). Except for SAB white women, the informal sector has the lowest representation among all groups.

There are notable disparities in occupational attainment across groups. Black women, especially FB individuals, are overrepresented in low-skill occupations compared to white women. Thus, white women are slightly more likely to be in medium- and high-skill occupations than black women. Specifically, only 17% of FB black women work in high-skill jobs compared to 23% of SAB black women (23%). Conversely, 51% of FB white women work in high-skill occupations compared to 42% of their SAB counterparts.

Significant income disparities exist between racial groups, with black women being more disadvantaged. The majority of SAB and FB black women (67 and 82% respectively) fall into the lowest income category, compared to only 12% of SAB white women and 11% of FB white women. SAB white women have the highest representation in the middle-income category (74%), followed by their FB counterparts (67%). Moreover, 22% of FB white women are in the high-income category, compared to only 2% of black women, highlighting an earning disadvantage for black women.

The above disparities in labour market outcomes may be influenced by differences in human capital across the groups. White women generally have higher educational attainment than black women. About half of SAB black women and two-thirds of FB black women have not completed secondary education, compared to about one in ten white women. Only 19% of SAB black women and 13% of FB black women have attained post-secondary education, compared to 49% of SAB and 64% of FB white women. English proficiency is higher among white than black women. In addition, consistent with migration history, FB white women have a longer stay (9 years) in South Africa than black immigrants (5 years).

Group differences are also evident in other sociodemographic factors. White women are more likely to be in union but less likely to be household heads than black women. Spatial distributions show that only 5% of white women reside in rural areas, whereas 26% of SAB black women and 15% of black immigrants live in rural areas. Gauteng province is a primary destination for immigrants, with about two-thirds and half of black and white immigrants, respectively, residing there.

5.2 Multivariable analysis

5.2.1 Sector of employment

Table 2 shows the log odds of working in the informal sector and private households relative to the formal sector. Gross differences show that FB black women are more likely to work in both the informal sector (83% ($e^{0.605}$)) and private households (2.4 times ($e^{0.869}$)) compared to SAB black women (Model 1). White women are less likely to work in these sectors than SAB black women. When accounting for human capital and demographic factors, SAB and FB white women's likelihood of working in the informal sector aligns with SAB black women, however, FB black women remain 80% ($e^{0.586}$) more likely to be informal workers. In Model 2, controlling for individual factors fully explains the difference between SAB white and black women working in private households, but FB women still have higher odds. FB black women are 2.8 times ($e^{1.012}$) more likely to work in private households than SAB black women, and

	Informal				Private households			
	1	2	3	4 ⁱ	1	2	3	4 ⁱ
Population group (ref = SAB black)								
SAB white	-0.738*** [0.07]	-0.084 [0.05]	-0.105 [0.05]	—	-0.949*** [0.04]	-0.416*** [0.06]	-0.545*** [0.07]	—
FB black	0.605*** [0.14]	0.586*** [0.07]	0.718*** [0.10]	—	0.869*** [0.05]	1.012*** [0.07]	1.297*** [0.08]	—
FB white	-0.792*** [0.13]	-0.101 [0.12]	-0.037 [0.19]	-0.659 [0.37]	-0.677*** [0.09]	0.304* [0.12]	0.145 [0.18]	-0.524* [0.24]
Education (ref = CSS)								
LCSS		0.611*** [0.02]	0.640*** [0.02]	0.406*** [0.07]		0.842*** [0.02]	0.875*** [0.03]	0.489*** [0.05]
Post-sec		-0.590*** [0.04]	-0.697*** [0.05]	-0.733*** [0.11]		-0.775*** [0.08]	-1.062*** [0.12]	-0.826*** [0.07]
YSM		0.020 [0.02]	0.020 [0.02]	0.009 [0.01]		-0.055*** [0.01]	-0.057*** [0.01]	-0.055*** [0.01]
YSM ²		-0.001 [0.00]	-0.001 [0.00]	0.000 [0.00]		0.002* [0.00]	0.002** [0.00]	0.002* [0.00]
English proficiency		-0.140*** [0.01]	-0.129*** [0.01]	-0.263** [0.10]		-0.017 [0.04]	-0.003 [0.04]	0.107 [0.06]
<i>Interactions</i>								
SAB white x LCSS			-0.483*** [0.05]				-0.512*** [0.06]	
SAB white x Post-sec			0.336*** [0.04]				0.862*** [0.13]	
FB black x LCSS			-0.218** [0.08]				-0.439*** [0.06]	

	Informal				Private households			
	1	2	3	4 ⁱ	1	2	3	4 ⁱ
FB black x Post-sec			-0.092 [0.14]				0.201 [0.16]	
FB white x LCSS			-0.574 [0.31]				-0.205 [0.27]	
FB white x Post-sec			0.107 [0.22]				0.643 [*] [0.25]	
FB white x YSM				-0.007 [0.08]				-0.103 [0.05]
FB white x YSM ²				0.000 [0.00]				0.004 [0.00]
Constant	-1.682 ^{***} [0.08]	-1.771 ^{***} [0.14]	-1.767 ^{***} [0.15]	-1.030 [*] [0.41]	-1.421 ^{***} [0.03]	-2.902 ^{***} [0.16]	-2.890 ^{***} [0.16]	-1.936 ^{***} [0.33]
N		291,284		14,576		291,284		14,576
Pseudo R ²	0.016	0.065	0.068	0.059	0.016	0.065	0.068	0.059

^{*} $p < 0.05$
^{**} $p < 0.01$
^{***} $p < 0.001$
ⁱ model for immigrants only.
 Standard errors in brackets.
 SAB = South African-born, FB = Foreign-born, LCSS = less than complete secondary school.
 Note: Models 2, 3, and 4 control for age, age-squared, marital status, household headship, rural-urban residence, and province of residence.
 Source: 2011 South African Census.

Table 2.
 Multinomial logit coefficients predicting the sector of employment for women aged 20–60.

FB white women are 36% ($e^{0.304}$) more likely than SAB black women to work in private households. These results highlight significant disadvantages for black women, especially FB women, in securing formal sector employment.

Human capital factors, especially education, strongly influence the employment sector. The least educated are more likely to work in the informal sector and private households, while the highly educated are less likely. For instance, those with LCSS education have 84% ($e^{0.611}$) higher odds of working in the informal sector and 2.3 times ($e^{0.842}$) higher odds of working in private households than those with CSS education. Conversely, individuals with post-secondary education have 45% and 54% lower odds of working in the informal sector and private households, respectively, compared to those with CSS education.

Returns to education vary across groups. In Model 3, the penalty for low education is less pronounced for white (SAB and FB) and FB black women. To illustrate, SAB black women with LCSS education are 90% more likely to work in the informal sector, while SAB white and FB black women are only 17% ($e^{0.640-0.483}$) and 53% ($e^{0.640-0.218}$) more likely, respectively, than SAB black women with CSS education. Similarly, the penalty for working in private households is lower for less educated SAB white and both black and white FB women compared to SAB black women.

College education benefits black women more than white women in avoiding informal and private household sectors. For instance, highly educated SAB black women are 50 and 65% less likely to work in these sectors, respectively, while similarly educated SAB white women are only 30% ($1-e^{-0.697+0.336}$) and 18% ($1-e^{-1.062+0.862}$) less likely compared to SAB black women with CSS education. Post-secondary-educated FB white women exhibit a similar pattern, particularly in avoiding private household jobs, while college-educated FB black women do not significantly differ from SAB black women with CSS education.

Other human capital factors are also significant factors. English proficiency is linked to less informal employment and a longer duration of stay in South Africa (YSM) reduces the odds of working in private households by 5% for each additional year of residence (Model 2), which remains consistent across racial groups (Model 4).

In summary, the formal sector is *less* accessible for black women, especially FB black women, but more favourable for white women. Highly educated black women are more likely to avoid non-formal employment compared to similarly educated white women.

5.2.2 Occupation

Table 3 presents results from multinomial logit models, assessing the likelihood of being in low- and high-skill occupations relative to medium-skill occupations.

White women, regardless of nativity, are less likely to be in low-skill occupations and more likely to hold high-skill jobs. SAB and FB white women are 78% less likely to work in low-skill jobs compared to SAB black women (Model 1). In contrast, FB black women have 38% ($e^{0.325}$) higher odds of being in low-skill occupations than SAB black women. Even after accounting for human capital and other factors, the odds for SAB and FB white women working in low-skill jobs decrease to 65% and 59%, respectively, compared to SAB black women (Model 2). However, control factors do not significantly affect the odds for FB black women.

FB black women are generally disadvantaged in securing high-skill jobs, while white women have higher odds of obtaining them (Model 1). However, the disadvantage for FB black women and the advantage for SAB white women in occupying high-skill jobs are fully explained by differences in human capital and demographic

	Low-skill				High-skill			
	1	2	3	4 ⁱ	1	2	3	4 ⁱ
Population group (ref = SAB black)								
SAB white	-1.510*** [0.22]	-1.037*** [0.22]	-1.183*** [0.25]	—	0.344*** [0.07]	-0.007 [0.05]	0.125*** [0.03]	—
FB black	0.325*** [0.09]	0.318* [0.13]	0.333*** [0.10]	—	-0.237*** [0.07]	0.063 [0.09]	0.002 [0.12]	—
FB white	-1.535*** [0.13]	-0.880*** [0.13]	-1.209*** [0.20]	-0.786* [0.34]	0.707*** [0.08]	0.341*** [0.10]	0.463** [0.15]	0.469* [0.21]
Education (ref = CSS)								
LCSS		0.943*** [0.08]	0.952*** [0.08]	0.926*** [0.06]		-0.283*** [0.05]	-0.293*** [0.06]	-0.170* [0.08]
Post-sec		-0.446*** [0.09]	-0.669*** [0.12]	-0.597*** [0.10]		1.172*** [0.10]	1.248*** [0.11]	1.289*** [0.12]
YSM		-0.015 [0.02]	-0.014 [0.02]	-0.012 [0.02]		-0.015 [0.02]	-0.017 [0.02]	-0.014 [0.02]
YSM ²		0.000 [0.00]	0.000 [0.00]	0.000 [0.00]		0.000 [0.00]	0.000 [0.00]	0.000 [0.00]
English proficiency		-0.032 [0.04]	-0.019 [0.04]	0.103 [0.09]		0.016 [0.02]	0.002 [0.02]	0.093 [0.09]
<i>Interactions</i>								
SAB white x LCSS			-0.433*** [0.08]				0.246*** [0.07]	
SAB white x Post-sec			0.964*** [0.15]				-0.242** [0.09]	
FB black x LCSS			-0.033 [0.11]				0.089 [0.09]	

	Low-skill				High-skill			
	1	2	3	4 ⁱ	1	2	3	4 ⁱ
FB black x Post-sec			-0.021 [0.15]				0.114 [0.19]	
FB white x LCSS			-0.107 [0.29]				0.115 [0.25]	
FB white x Post-sec			1.008*** [0.25]				-0.160 [0.19]	
FB white x YSM				-0.072 [0.08]				-0.031 [0.04]
FB white x YSM ²				0.002 [0.00]				0.001 [0.00]
Constant	0.102 [0.06]	-0.670*** [0.09]	-0.653*** [0.09]	-0.787* [0.34]	-0.446*** [0.04]	-1.043*** [0.10]	-1.065*** [0.10]	-1.445** [0.45]
N		291,284		14,576		291,284		14,576
Pseudo R ²	0.033	0.124	0.126	0.139	0.033	0.124	0.126	0.139

^{*} $p < 0.05$
^{**} $p < 0.01$
^{***} $p < 0.001$
ⁱ model for immigrants only.
 Standard errors in brackets.
 SAB = South African-born, FB = Foreign-born, LCSS = less than complete secondary school.
 Note: Models 2, 3, and 4 control for age, age-squared, marital status, household headship, rural-urban residence, province of residence, and employment sector.
 Source: 2011 South African Census.

Table 3.
Multinomial logit coefficients predicting occupation category for women aged 20–60.

factors. After accounting for these factors, SAB white and FB black women are no longer significantly different from SAB black women in their likelihood of working in high-skill occupations (Model 2). However, the advantage for FB white women remains, with a 41% higher likelihood of working in high-status jobs compared to similar SAB black women (Model 2).

Once again, human capital characteristics significantly influence occupational attainment, with education being a major factor. There is a clear pattern of educational gradient to occupational attainment, with individuals with lower levels of education being more likely to work in low-skill occupations and less likely to secure high-skill occupations. In contrast, those with higher levels of education are less likely to be in low-skill jobs and more likely to be in high-skill jobs. For instance, compared to women with CSS education, those with the least education have 2.6 times higher odds of being in low-skill occupations and 25% lower odds in high-skill jobs. Women with a college education are 36% less likely to be in low-skill occupations and 3.2 times more likely to secure high-skill jobs.

Group differences in the returns to education are notable, especially when comparing low-skill to medium-skill occupations. SAB black women with LCSS education are 2.6 times ($e^{0.952}$) more likely to work in low-skilled occupations than their SAB black counterparts with CSS education. In comparison, SAB white women with LCSS education are 1.7 times ($e^{0.952-0.433}$) more likely to work in low-skill occupations. There are no significant differences between FB white women with LCSS education and the reference category. Thus, less educated SAB white women are slightly less likely to work in low-skill occupations than less educated SAB black women.

College-educated black women have an advantage over their white counterparts. SAB black women with post-secondary education are 49% ($1-e^{-0.669}$) less likely to be in low-skill occupations, while their white counterparts are 34% ($e^{-0.669+0.964}$) more likely, and highly educated FB white women are 40% more likely, than SAB black women with CSS education to work in low-skill occupations. This pattern is also evident when comparing high-skill to medium-skill occupations. Other human capital factors, such as length of stay in South Africa and English proficiency, do not significantly affect women's occupational attainment.

In summary, black women, especially FB black women, are more inclined to work in low-skill occupations compared to white women. However, differences in high-skill jobs disappear, except for FB white women, when other factors are accounted for. Highly educated black women have a slight edge over similar white women in avoiding low-skill occupations.

5.2.3 Income

The final models estimate the likelihood of being in the middle- or high-income category relative to the low-income category, while controlling for the employment sector and occupational skill level. **Table 4** shows that FB black women face an income disadvantage compared to SAB black women. FB black women are less likely to fall into the middle-income category (regardless of other factors) and the high-income category (net of other factors) than SAB black women, making them more likely to be low-income earners. Model 1 indicates that FB black women have a 60% lower likelihood ($1-e^{-0.904}$) of being in the middle-income category compared to SAB black women. After accounting for other factors, FB black women have 67% ($1-e^{-1.115}$) and 39% ($1-e^{-0.500}$) lower odds of being in the middle- and high-income categories, respectively, compared to SAB black women.

	Middle income				High income			
	1	2	3	4 ⁱ	1	2	3	4 ⁱ
Population group (ref = SAB black)								
SAB white	2.589*** [0.07]	1.800*** [0.07]	1.962*** [0.09]	—	3.678*** [0.12]	2.588*** [0.12]	3.083*** [0.20]	—
FB black	-0.904*** [0.10]	-1.115*** [0.08]	-1.059*** [0.08]	—	-0.093 [0.19]	-0.500* [0.22]	-1.058* [0.43]	—
FB white	2.527*** [0.11]	0.965*** [0.11]	0.997*** [0.16]	1.896*** [0.27]	4.143*** [0.21]	2.133*** [0.23]	2.262*** [0.29]	2.952*** [0.40]
Education (ref = CSS)								
LCSS		-1.307*** [0.05]	-1.357*** [0.05]	-1.105*** [0.07]		-1.291*** [0.06]	-1.075*** [0.08]	-0.558** [0.19]
Post-sec		1.642*** [0.04]	1.823*** [0.05]	1.542*** [0.08]		2.690*** [0.05]	3.116*** [0.12]	3.006*** [0.17]
YSM		0.116*** [0.01]	0.111*** [0.01]	0.121*** [0.01]		0.059 [0.04]	0.054 [0.04]	0.089* [0.04]
YSM ²		-0.004*** [0.00]	-0.004*** [0.00]	-0.004*** [0.00]		0.000 [0.00]	0.000 [0.00]	-0.001 [0.00]
English proficiency		0.419*** [0.02]	0.411*** [0.02]	0.618*** [0.10]		0.872*** [0.07]	0.859*** [0.07]	0.793*** [0.17]
<i>Interactions</i>								
SAB white x LCSS			0.363*** [0.07]				-0.217 [0.12]	
SAB white x Post-sec			-1.229*** [0.07]				-1.597*** [0.17]	
FB black x LCSS			0.081 [0.11]				0.814** [0.27]	

	Middle income				High income			
	1	2	3	4 ⁱ	1	2	3	4 ⁱ
FB black x Post-sec			-0.299** [0.09]				0.378 [0.40]	
FB white x LCSS			0.759** [0.25]				0.957* [0.46]	
FB white x Post-sec			-0.735*** [0.21]				-0.844** [0.30]	
FB white x YSM			—	0.052 [0.06]			—	-0.040 [0.09]
FB white x YSM ²			—	-0.002 [0.00]			—	0.000 [0.00]
Constant	-0.757*** [0.06]	-3.172*** [0.15]	-3.195*** [0.15]	-4.722*** [0.47]	-3.506*** [0.16]	-11.825*** [0.39]	-12.001*** [0.45]	-13.097*** [1.00]
N		291,284		14,576		291,284		14,576
Pseudo R ²	0.131	0.34	0.343	0.378	0.131	0.34	0.343	0.378

^{*} $p < 0.05$
^{**} $p < 0.01$
^{***} $p < 0.001$
ⁱ model for immigrants only.
 Standard errors in brackets.
 SAB = South African-born, FB = Foreign-born, LCSS = less than complete secondary school.
 Note: Models 2, 3, and 4 control for age, age-squared, marital status, household headship, rural-urban residence, province of residence, sector of employment, and occupation category.
 Source: 2011 South African Census.

Table 4.
 Multinomial logit coefficients predicting income category for women aged 20–60.

This income disadvantage does not extend to white women. SAB and FB white women enjoy an income advantage over SAB black women (Model 1). Although controlling for human capital and other factors reduces this advantage, it remains significant, particularly for SAB white women. For instance, Model 2 shows that compared to SAB black women, SAB and FB white women are 6.0 times ($e^{1.800}$) and 2.6 times ($e^{0.965}$) more likely to be middle-income earners, and 13 times ($e^{2.588}$) and 8.4 times ($e^{2.133}$) more likely to be high-income earners, respectively.

Human capital characteristics are important determinants of earnings. Higher education correlates with higher income. Those with post-secondary education have 5.2 times ($e^{1.642}$) higher odds of being in the middle-income category and 15 times ($e^{2.69}$) higher odds of being in the high-income category relative to women with CSS education. Conversely, women with LCSS education are 73% less likely to be in the middle- or high-income earners. Thus, the least educated are most likely to earn below R38,400 per annum.

The returns to education vary across groups. SAB black women with LCSS education are 74% ($1 - e^{-1.357}$) less likely to be middle-income earners than their counterparts with CSS education. In comparison, similar SAB and FB white women are 63% ($1 - e^{-1.357 + 0.363}$) and 45% ($1 - e^{-1.357 + 0.759}$) less likely, respectively (Model 3). For highly educated individuals, SAB black women with college education have 6.2 times ($e^{1.823}$) and 23 times ($e^{3.116}$) higher odds of being in the middle and high-income categories, respectively. In contrast, similar white women (SAB and FB) have significantly lower odds compared to SAB black women with CSS education.

Labour market experience plays a crucial role in income attainment. Each additional year of stay immigrants' odds of being in the middle-income category by approximately 12% (Model 2), which is consistent across both black and white immigrants (Model 4). English proficiency also boosts income levels; women who predominantly speak English at home have 1.5- and 2.4-times higher odds of being in the middle- and high-income categories, respectively, compared to those speaking other South African languages, aligning well with previous studies [51, 52]. However, the returns to English proficiency are comparatively lower for white women, especially in the models predicting high-income (results not shown).

Overall, white women have an income advantage over black women, especially FB black women, who are less likely to be in the middle and high-income categories than SAB black women. However, black women see better returns to higher education than white women. In addition, both black and white immigrants experience improved odds of earning higher income with longer residence in South Africa, particularly for middle-income earners.

6. Discussion

This chapter examined women's labour market outcomes in South Africa, focusing on disparities by race and nativity. Previous research has investigated labour market outcomes for South African-born (SAB) women. Still, only a few have compared foreign-born (FB) women to their SAB counterparts or explored the race-nativity interaction. This research bridges this literature gap by examining how the intersection between race and nativity shapes labour market outcomes in the South African context, and investigating how human capital factors influence these outcomes. The study focuses on three outcomes: sector of employment, occupation, and income attainment.

The findings reaffirm existing racial disparities in the South African labour market [53–55], with white women consistently faring better than black women. Thus, they are less likely to work in the informal sector and private households, occupy low-skill occupations, and fall into the lowest income category compared to black women. While human capital and demographic factors explain some disparities, significant differences remain. In particular, FB black women face considerable disadvantages, with a higher likelihood of working in the informal sector, private households, and low-skill occupations. They are also less likely to be in the middle or high-income categories than their SAB counterparts.

The significant disadvantage faced by FB black women is concerning. Like in other immigrant-receiving contexts, FB black women in South Africa are more likely to take less desirable jobs, such as domestic work, but are sought after for cheap labour. Thus, while FB black women are more likely to occupy low-skill occupations than SAB black women, they have equal chances of holding high-skill jobs but are less likely to fall into the middle or higher-income categories. This aligns with findings from Ref. [10] which found similar results for immigrant men in South Africa. Most importantly, these results underscore the limited integration of black immigrants into the South African labour market and highlight how race and nativity impede their success.

Results also shed light on one pertinent question: Do immigrants outperform natives in the South African labour market? It is undeniable that FB black women *do not* outperform SAB women, regardless of race, while FB white women outperform SAB black women but not SAB white women. These findings align with the results reported by [8]. The significant disadvantage faced by FB black women may be attributed to their likely undocumented legal status, compelling them to enter into the informal market or take jobs incommensurate with their qualifications [4]. Additionally, Afrophobia-related attacks hinder the growth of their businesses, contributing to poor outcomes [56–58].

So, what do these results mean for immigrant women's labour market integration in South Africa? On the one hand, FB black women experience delayed mobility into the native mainstream. First, individual characteristics do not fully explain the disadvantages faced by FB black women, particularly in employment and income outcomes. Second, length of stay slightly improves mobility out of private households and boosts income, but does not predict informal employment or occupational attainment. Thus, FB black women gradually boost their income without significantly transitioning into the formal sector or high-status occupations. Third, returns to education are marginally better for black than white women. Less educated FB black women tend to avoid informal and private household jobs better than their SAB counterparts. However, there is little difference between FB and SAB black women in terms of returns to higher education. Taken together, FB black women experience gradual mobility into the SAB black mainstream [10].

On the other hand, FB white women do not face the same delayed incorporation challenges when compared to SAB black women but do not achieve better outcomes than SAB white women. First, they are more likely to work in private households and high-skill occupations than SAB black women, while SAB white women are less likely to be in private households and equally likely to hold high-skill jobs. Second, their odds of being in the middle or high-income categories are lower than SAB white women, although they face a smaller penalty for low education in attaining higher incomes. Overall, FB white women perform better than black women, but less so than SAB white women, indicating varying returns based on race.

From a policy perspective, the higher return on college education for black women, irrespective of immigration status, is promising. Highly educated black women consistently experience greater returns to their education compared to their white counterparts. Notably, highly educated black women have significantly higher odds of being in the high-income category than white women, signalling hope and progress. These findings align with previous studies that have observed a narrowing wage gap between blacks and whites in South Africa, especially among the highly educated [38, 59].

In addition, the significance of English proficiency for income attainment is suggestive. English proficiency is linked with lower informal employment, higher formal employment, and higher incomes, which is consistent with findings from Casale and Posel [51] and Kahn et al. [52]. This suggests that English proficiency helps women access remunerative jobs or negotiate better wages in the South African labour market.

7. Conclusion

In conclusion, the race-nativity intersection significantly shapes women's labour market outcomes in South Africa. Regardless of migration status, white women achieve more favourable outcomes than black women. In particular, FB black women face considerable disadvantages, evidenced by their higher likelihood of employment in the informal sector, private households, and low-skill occupations, as well as their lower likelihood of earning higher incomes than their colleagues. These challenges underscore the limited integration of FB black women into the South African labour market and highlight how race and nativity impede the success of black immigrants. Overall, FB black women experience delayed mobility into the South African mainstream. In contrast, FB white women do not face the same incorporation challenges as FB black women. Overall, FB white women achieve favourable outcomes than SAB black women, but they lag behind SAB white women, highlighting varying returns based on race.

The returns to human capital also vary by race, with higher education greatly benefiting black women. Proficiency in English enables women to secure remunerative jobs or negotiate better wages. Therefore, promoting college education and English language skills, alongside ensuring a safe environment for immigrants, can help reduce labour market disparities and improve the integration of black immigrants. These efforts can foster greater equity and inclusivity within the South African labour market.

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Chapter 6

Relationship between Migration, Population Growth, Renewable Energies, and CO₂ Emissions in Cities in Latin America and Caribbean

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Abstract

Cities and, therefore, countries face different phenomena that influence their behaviour and sustainability. This article analyses the impact of migration, population growth, the use of renewable energy, and CO₂ emissions in the main cities of Latin America and the Caribbean. This research has a quantitative descriptive and analytical approach, which allowed us to show that, although the percentage of CO₂ emissions, has decreased in most countries and population growth is a variable that is also gradually decreasing, it is the CO₂ emissions per capita that tend to increase, with the transport sector having the greatest impact on cities.

Keywords: sustainable cities, migration, population growth, renewable energies, CO₂ emissions, Latin America and the Caribbean

1. Introduction

A sustainable city generates viable economic, social, and environmental growth in the long term, with inclusive urban development for all people and groups in the city. It is characterised by quality infrastructure and services that allow the life and development of its inhabitants, as well as the reduction of environmental impacts and the responsible use of natural resources [1].

Furthermore, the concept of a sustainable city has been evolving since the 1972 Stockholm Conference on the Human Environment, one of the first international

meetings to address the issue of sustainable development. Since then, the concept has been expanded to include urban planning and the improvement of social conditions [2].

As the concept of a sustainable city became more relevant, different initiatives emerged to develop indicators to measure and monitor progress towards urban sustainability. These indicators evaluate aspects, such as air quality, energy use, waste management, mobility, and quality of life.

The gap in the literature lies in the lack of understanding of the relationship between variables such as migration, population growth, renewable energy, and CO₂ emissions in cities in Latin America and Caribbean.

The article is structured in three sections: the first is a review of the existing literature, which facilitates the understanding of each of the variables proposed in the study, their relationship, and their impact on the cities of Latin America and the Caribbean. The second presents the methodology to be developed; the third presents the identified results; and finally, the conclusions of the research are presented.

2. Theoretical framework

Individuals and families are considered the core of society since they are the ones who make cities and countries optimise their functions to satisfy their needs and live with dignity, also for the benefit of future generations. Over the last 20 years, there have been changes in population growth, especially in urban areas, as developing countries have made a rapid transition from rural to urban economies.

The global energy crisis requires renewal in the energy sectors and conscious consumption, because it is not possible to exceed the level of atmospheric concentration of greenhouse gases, because it is a risk for the planet.

Likewise, the excessive emission of greenhouse gases (GHG) has generated the phenomenon of global warming [3], which has arisen because humans have managed to increase the presence of gases in the troposphere to unusual levels, resulting in different climatic phenomena that affect humanity economically, culturally and environmentally, in the short, medium and long term, without forgetting that they increase every day due to human activity [4].

Thus, different actions have been implemented in the world to improve the conditions derived from climate change, being the cities the ones that must take greater actions, to achieve good care of the environment by avoiding the dispersion of pollutants on the planet [5].

Latin American and Caribbean nations have made significant progress in improving sustainable cities in recent years [6]. For example, Brazil has implemented schemes and projects to promote urban-sustainable developments, such as the Sustainable Urban Development Programme (PDUS), which seeks to promote the planning, foundation and conservation of sustainable cities through economic incentives. Other countries, such as Colombia and Chile, have also developed national policies to promote sustainable urban development, such as the Sustainable Urban Development Programme of Colombia and the Sustainable Urban Development Programme of Chile. These programmes seek to encourage the efficient use of natural resources, the reduction of the ecological footprint and the development of infrastructure and services for the natives of these cities [7].

In Latin America and the Caribbean, the promotion of sustainable cities has gained momentum in recent decades. Several nations in the territory have adopted

schemes and programmes aimed at promoting sustainable urban development [8]. Some examples of advances in sustainable cities in Latin America and the Caribbean and the Caribbean include (**Table 1**).

For this reason, the sustainable relationships that develop in cities for energy consumption and the transition towards renewable energies have been addressed in recent years both nationally and internationally, leading to the implementation and innovation of the solutions given to counteract the situations that arise as a consequence of climate change, carbon emissions and the need to replace their way of thinking and acting, managing to impact the culture of the place so that the changes that are urgent are acquired by the population.

Evolution is imperative, since the transition towards renewable energies allows the sanitation of cities and the industrialised growth of structures, promoting flexible actions and easy social and ecological adaptation to the system [12].

Furthermore, sustainable cities implement strategic urban planning that seeks to minimise distances between places of work, study, and residence. By promoting compact and well-connected development, travel and, consequently, the energy consumption associated with transportation is reduced.

The direction of being a sustainable city is one of the causes of the paradoxical impact of anthropocentric ecology on the solution, so the implementation of sustainable possibilities is inspired by reality [13].

Sustainable cities promote intelligent urban planning and efficient land use. This implies the design of solid cities, with greater population concentration and a mix of residential, commercial, and service areas [14]. Reducing urban sprawl limits the use of private vehicles and encourages the use of sustainable modes of transport, helping to reduce CO₂ emissions [15]. According to Refs. [16, 17], this facilitates the establishment of measures that promote the use of alternative energies.

In this regard, Rezaei et al. [18] consider that to promote the use of alternative energies and improve the processes necessary to reduce CO₂ emissions, it is necessary to include technological and Artificial Intelligence elements to analyse the presence or absence of different variables and parameters necessary to care for the environment.

City	Experience
Medellín, Colombia [9]	The city has undergone a notable transformation in recent years, with a high level of public transport acquisition, social infrastructure development, and revitalisation of public spaces. It has also implemented mass transportation projects, such as the Metrocable system, and has promoted social inclusion and community development programmes.
Mexico Federal District [10]	Various initiatives have been adopted to promote urban sustainability. In addition, it has implemented mass public transportation programmes, such as the Metro and Metrobus, to reduce traffic congestion and greenhouse gas emissions. Green infrastructure projects, such as river rehabilitation and the creation of linear parks, are highlighted to improve air pollution and provide green spaces for residents.
Panama City [11]	Panama has focused on improving and enhancing green infrastructure and protecting its natural resources. Urban parks and green areas have been created, and the conservation of mangroves and the region's biodiversity has been promoted. In addition, policies have been implemented to optimise waste management and reduce energy consumption in buildings.

Table 1.
Advances in sustainable cities in Latin America and the Caribbean.

Sustainable cities seek to establish a favourable relationship between economic, environmental, and social contexts in consumption and production, through awareness, resource efficiency [19] and sustainable lifestyles, influencing thus indirectly in reducing poverty and achieving a transition towards green economies that improve and reduce carbon emissions [20].

Population growth in sustainable cities is also a crucial aspect of urban planning and sustainable development. As more people migrate to metropolises in search of economic opportunities and a better standard of living, challenges arise in terms of infrastructure, housing, public services, and natural resource management. Sustainable cities seek to balance population growth with environmental management, energy efficiency, social and economic equity, and citizen participation.

Therefore, sustainable urban planning is essential to meet the challenges of population growth and ensure the efficient use of urban space and natural resources [21].

Urban densification is, therefore, a key strategy to address population growth and reduce urban sprawl, but it must be accompanied by sustainable transport policies and quality public services [22].

To manage population growth sustainably, cities implement several strategies (Figure 1).

Population growth in sustainable cities can be a challenge, but it also provides opportunities to optimise quality of life, foster innovation and build more resilient communities. With proper planning and the adoption of sustainable practices, balanced and environmentally friendly urban growth can be achieved.

For this reason, it is important to note that migration, especially to urban areas, can have a significant impact on energy consumption and CO₂ emissions, and should be considered when planning. Authors such as Bollinger and Gillingham [23] have shown in their research that a greater concentration of population in cities leads to greater consumption of fossil fuels for transportation, heating, and cooling.

This concentration of people in urban areas also leads to a greater demand for infrastructure, which can generate additional emissions associated with the construction and operation of such facilities [24].

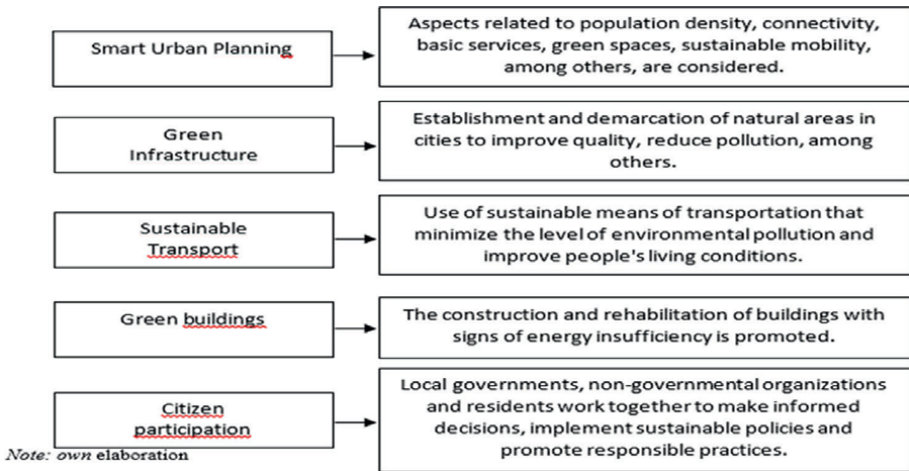


Figure 1.
Strategies for sustainable population growth.

The increasing implementation of renewable energies has been studied by several researchers. Rödenbeck et al. [25] have shown in their work that the transition to renewable sources can significantly reduce CO₂ emissions and reduce dependence on fossil fuels. However, it should be considered that, during the process of adopting renewable energy, there may be a temporary increase in consumption due to the need for investment in infrastructure and clean technologies [26].

The dynamics between migration, population growth, renewable energy, and CO₂ emissions in Latin American and Caribbean cities are crucial to understanding and addressing contemporary sustainable development challenges in the region. Migration, both internal and international, plays a fundamental role in shaping urban populations, whether driven by economic, political, social, or environmental factors.

In this context, the adoption of renewable energy emerges as an essential strategy to address another pressing problem: CO₂ emissions and climate change. Latin America and the Caribbean have significant potential for energy generation from renewable sources, such as solar, wind, hydro, and geothermal. The transition to cleaner energy sources can not only reduce CO₂ emissions but also diversify the energy mix and increase resilience to external shocks in energy supply.

The interrelation between these elements is evident. Population growth due to migration increases energy demand in cities, which can intensify the pressure on traditional energy sources and their associated emissions. However, this challenge also presents an opportunity; the integration of renewable energy can meet the growing demand for energy in a sustainable way. Successful implementation of urban and energy planning policies could facilitate convergence between attracting immigrants, growing cities, adopting renewable energy, and reducing CO₂ emissions.

Ultimately, understanding the relationship between migration, population growth, renewable energy, and CO₂ emissions in LAC cities is essential to guide informed policy decisions. Governments and local authorities must consider these interrelated factors when designing urban and energy development strategies that promote sustainability, equity, and the well-being of evolving urban populations.

3. Methodology

The databases for this research were obtained from the different Climatewatch Datasets and the World Bank databases, selecting the World Development Indicators dataset where the data corresponding to percentage net migration, percentage total population growth, total CO₂ emissions in kilotonnes, and renewable energy production are found.

3.1 Data cleansing and preparation

In this phase, the data are preprocessed to ensure that it has the appropriate characteristics and conditions for analysis. Data cleaning and preparation includes removal, standardisation, imputation, and formatting of outliers.

3.1.1 Type, scope, and design of the research

In this research, a descriptive and analytical quantitative study was developed, in addition to the use of different variables, such as a longitudinal study of open data with data analysis, integration of statistical and predictive models that determine the impact of the variables in subsequent years of the study.

3.2 Procedure

This research was carried out in three phases:

- a. The first was the review of open data sources corresponding to the research criteria, which are listed below: migration, population growth, renewable energy production, total carbon (CO₂) emissions. Then, we proceed to choose the variables of the database and the years of interest for the research, corresponding to the year 2000 until 2021 in all variables.
- b. In the second phase, it was verified that the data obtained can be used and is suitable for the start of the analytical stage. From there, use is made of the Kaggle platform with the Python programming language, where four (4) Notebooks are created, and the default data for each of them is uploaded.
 - The first of these corresponds to Net Migration, which contains only one (1) dataframe of the data obtained, corresponding to the Net Migration dataset,
 - The second contains the Population growth, this has one (1) dataframe corresponding to the growth of the “total rural population” as a percentage of the World Bank dataset,
 - The third Notebook relating to CO₂ emissions has four (1) dataframes, this one representing “CO₂ emissions” and the last one “CO₂ emissions from transport,”
 - The fourth Notebook which corresponds to renewable energy production has only one dataframe containing renewable energy production.
- c. The third phase allows the different statistical analyses to be understood and carried out. The dataframes are differentiated with acronyms, we proceed to extract libraries that allow us to use the language, using: pandas, matplotlib.pyplot, seaborn, statistics, numpy. Once extracted, we proceeded to create the acronym in the code for each dataframe, a code was predisposed to eliminate null data and data with attributes of dots and commas. Next, we proceed to make histograms of all the countries and regions relevant to the research, and we finish with a simultaneous histogram, which allows us to visualise the equality of columns and rows of the variables in order to develop a predictive method through a linear regression method exercised by the Kaggle platform.

Likewise, the Plot libraries are used to show the graph of the predictive model on each of the variables, which is reflected in a trend map for the four variables.

4. Results

A descriptive analysis of each variable is carried out separately, calculating descriptive statistics such as averages, medians, standard deviations, and percentiles, among others, for each of the variables: migration, population growth, renewable energy production, and CO₂ emissions.

In this phase, visualisations are made to help understand trends and relationships between variables. Scatter plots, histograms, line graphs and other types of graphs are used as appropriate (**Figure 2**).

In general, CO₂ emissions in Latin American countries have experienced an increase in recent decades, the magnitude of this increase and the speed of growth can be seen in countries such as Antigua and Barbuda, Bahamas, and Venezuela, depending on factors such as the structure of the economy, environmental policies and the availability of natural resources.

The main sources of CO₂ emissions in these countries tend to be power generation, industry, transport, and deforestation. The largest source of carbon dioxide emissions comes from the combustion of coal, oil, and gas from power plants, automobiles, and industrial facilities [27].

According to the **Figure 3**, carbon dioxide (CO₂) emissions have experienced a significant increase mainly due to human activity, especially the burning of fossil

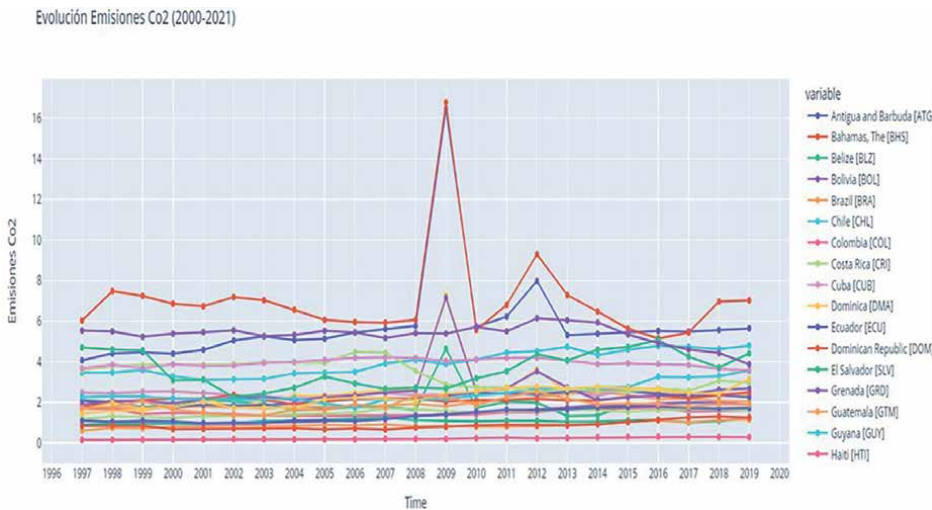


Figure 2.
CO₂ emissions in the period 2000–2021 by country.

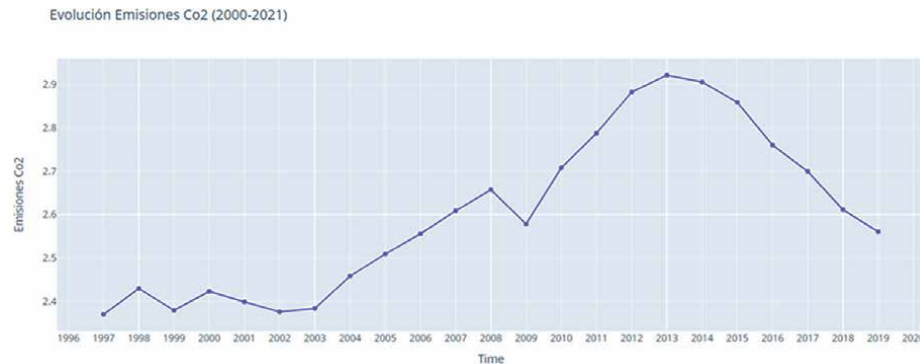


Figure 3.
Total CO₂ emissions in the period 2000–2021.

fuels such as coal, oil, and natural gas for energy and transport. We can see that the year 2013 has been the highest peak of CO₂ emissions, since in this year the incidence of the climatic phenomenon known as El Niño, the most intense since 1950, is evident. This consists of the flow of water with higher temperatures from the western Pacific towards the eastern Pacific, near the Equator and the South American coasts. Typically, this weather phenomenon is followed by an increase in dry areas and rainforest fires, as well as other landscape changes that lead to increased CO₂ levels, Climate Watch Historical GHG Emissions (**Figure 4**) [28].

Latin America and the Caribbean have a long history of migration, both internal and external. For centuries, people have moved within the region in search of economic opportunities, escaping political conflicts or seeking better living conditions. According to the graph, Colombia, Peru, and Chile have the highest level of migration in recent years, because both Colombia and Peru are geographically and economically diverse, which can lead to regional inequalities in terms of employment opportunities, access to basic services and quality of life. This can motivate people to migrate from less developed regions to urban areas or to other countries in search of better economic opportunities.

Chile, in particular, has experienced rapid economic growth in recent decades, which has attracted large numbers of migrants from other countries in the region and other parts of the world in search of job opportunities. Accelerated urbanisation in countries, such as Peru and Colombia, may also be driving internal migration to major cities.

Venezuela, on the other hand, is the country with the lowest migration value, due to a combination of economic, political, and social factors, including the economic crisis, political instability, lack of basic services, and violence. This situation has led to a large volume of Venezuelans seeking security, stability, and better life opportunities in other countries (**Figure 5**) [29].

The evolution of renewable energy production in Latin America and the Caribbean has been positive in recent decades, driven by a combination of factors, such as abundant natural resources, favourable policies, reduced costs, and environmental and social benefits. Despite the growth in renewable energy production, some countries such as Puerto Rico, Curacao, and Cuba still face challenges in terms of integrating renewables into the grid, access to finance, and technical and regulatory

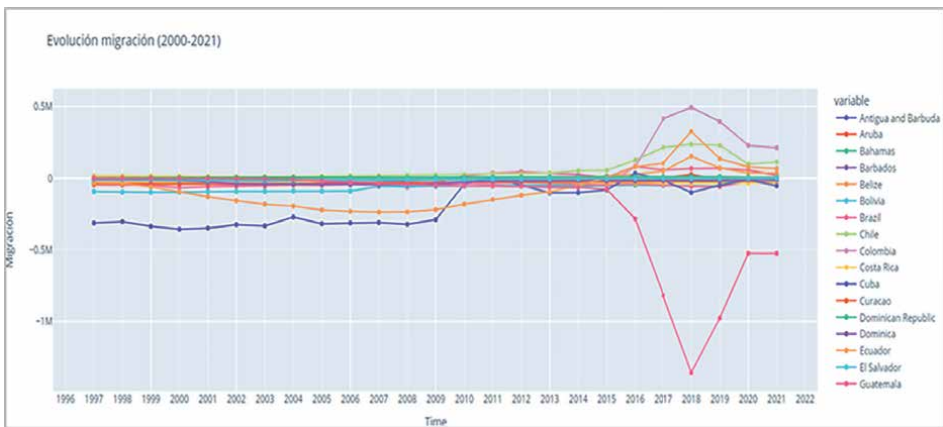


Figure 4.
Migration in the period 2000–2021.

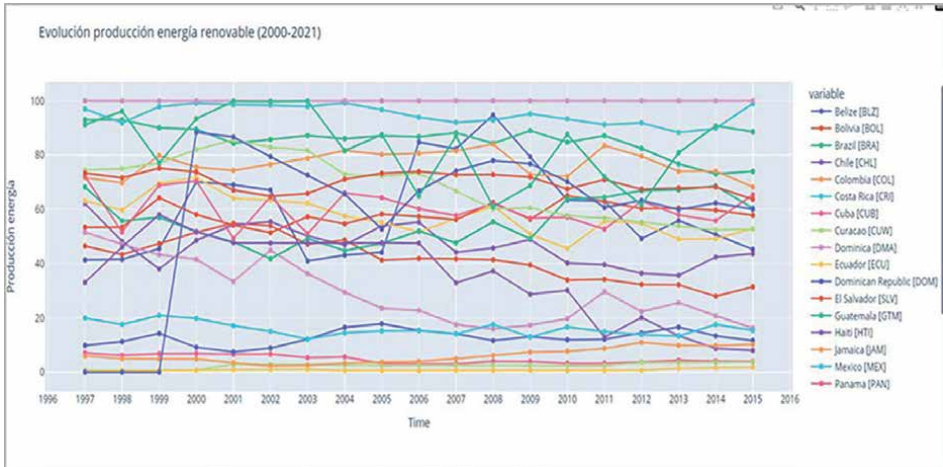


Figure 5.
 Total CO₂ emissions in the period 2000–2021.

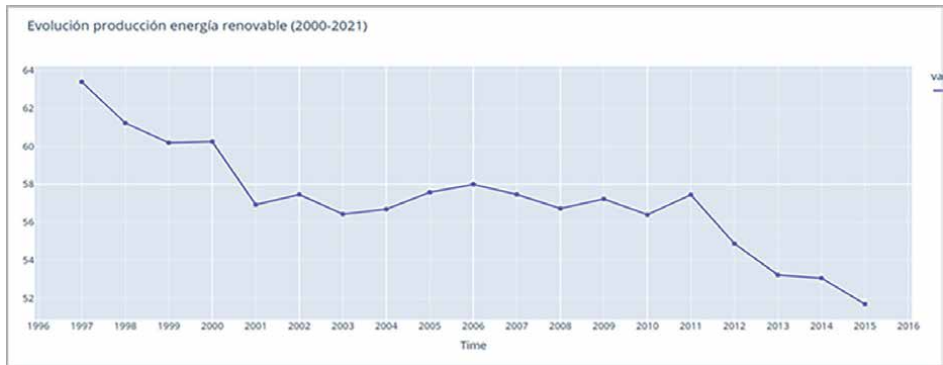


Figure 6.
 Renewable energy developments.

capacity building. However, the growth potential of renewable energy in Latin America and the Caribbean remains significant and offers opportunities to drive sustainable development in the region (**Figure 6**) [30].

In recent decades, as can be seen in the graph, renewable energy production in Latin America and the Caribbean has experienced a significant decrease because the region still faces challenges in terms of integrating renewable energy into the electricity grid, access to financing, and the development of technical and regulatory capacities. However, the growth potential of renewable energy in Latin America and the Caribbean remains significant and offers opportunities to drive sustainable development in the region [31].

4.1 Correlation analysis

Correlation coefficients, such as Pearson or Spearman, were assessed to quantify these relationships.

The **Figure 7** shows a negative relationship with a tendency to a gradual fall, which infers that for Latin America and the Caribbean and the Caribbean in the production of renewable energies at the percentage level there is a relationship in the behaviour that decreases in relation to time, however, its relationship is pronounced by the linear line, which is how it is determined that according to time, the production of renewable energies for Latin America and the Caribbean decreases continuously (**Figure 8**).

In the Figure, a negative relationship can be observed, the data in percentage decreases, as X increases. This corresponds to time. On observing the linear line, it is determined that there is no marked dispersion, but rather that it maintains uniformity with the tendency to fall, therefore, this infers that when time increases, population growth for Latin America and the Caribbean in percentage decreases uniformly without giving way to a noticeable dispersion (**Figure 9**).

Finally, the correlation for migration reflects a more pronounced dispersion where the data shows a fall at the beginning and an increase at the end, and the Linear line shows a positive trend of growth, so although initially according to X migration decreases until 2010, but after that year the trend changes to positive with a more pronounced dispersion.

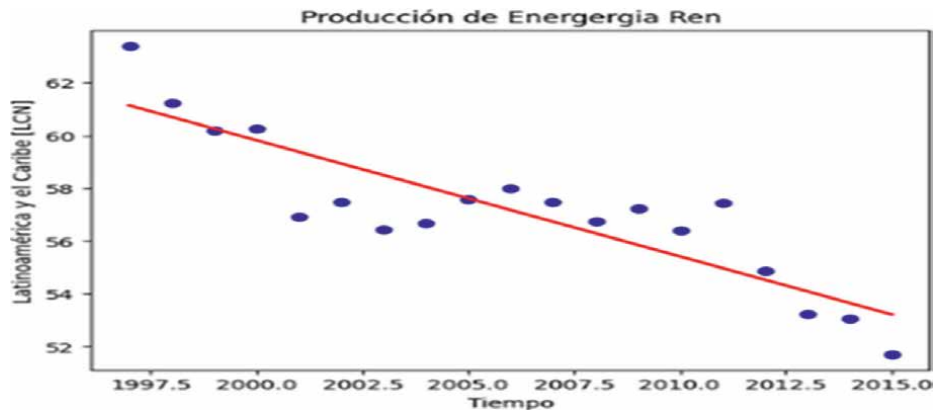


Figure 7.
Correlation of renewable energy production.

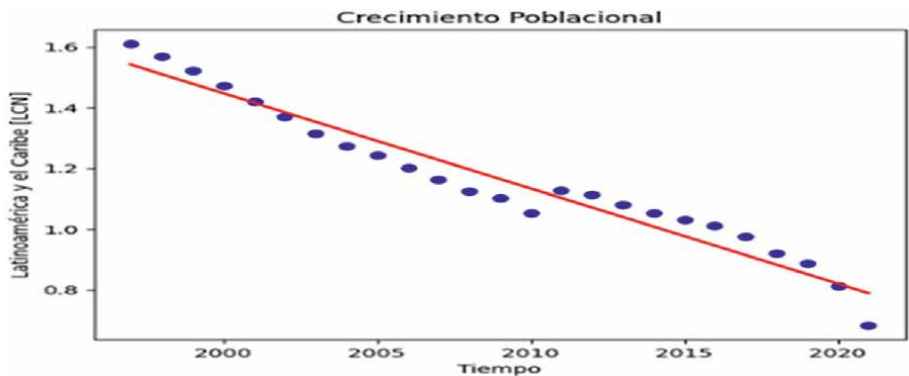


Figure 8.
Correlation population growth.

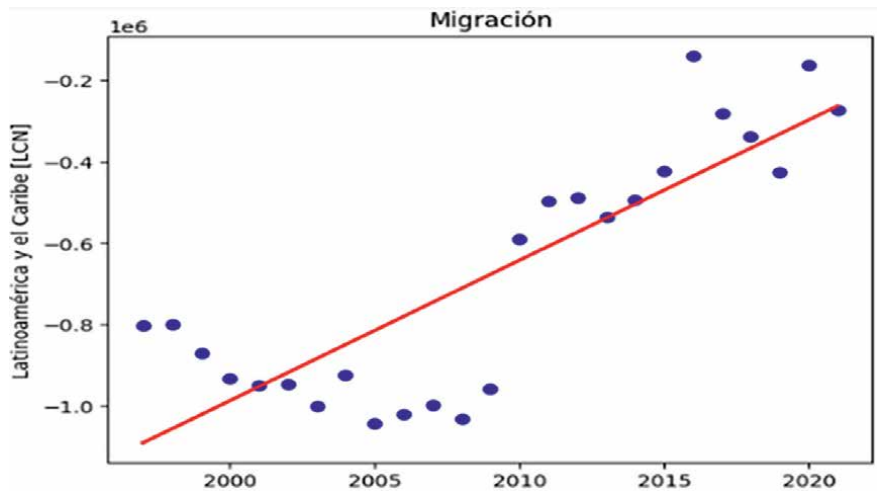


Figure 9.
Population migration.

5. Conclusions

The results of the descriptive analysis will be used to answer the question: What patterns or relationships exist between migration, population growth, renewable energy production, and CO₂ emissions?

In terms of migration in the countries of Latin America and the Caribbean, it can be seen that the data analysed by the World Bank [29] corresponds to countries with a low migration rate that is tending to increase, including Mexico and Nicaragua, which despite being low, show an increase in the rate due to the increase in migration to the USA (United States of America) [30].

As for the countries most correlated with the trend in the southern region of the continent, such as Brazil, Uruguay, and Peru, it is linked to the socio-political effects experienced in Venezuela, which has allowed for the largest migration in history after Syria, in addition to the gradual migration of Haitian citizens due to the earthquake witnessed in 2010 [30].

Population growth, according to the Economic Commission for Latin America and the Caribbean and the Caribbean [31] is a global phenomenon, related to the decrease in fertility, however, there are countries that are negatively correlated, despite this, the majority tend to decrease, in addition to this, the growth in the rural population is finally the type of population that accumulates the most, understanding that the population of Latin America and the Caribbean is the most urbanised at the global level of developing regions.

Thus, deficient state entities and social conditions are driving this accumulation in the cities [32]. At the same time, the rural population is also decreasing at a higher rate and it is projected that in 2030, the rural population will occupy only 17% of the total population [24].

In relation to CO₂ emissions in the residential and commercial buildings sector, the trend in percentage is to decrease, especially in the most correlated countries, such as Mexico, with the energy optimisation programme for housing (FIDE, 2022). On the other hand, the emissions of one of the countries that are least correlated with the

trend in the region is the Dominican Republic, which is capable of surpassing most Central American countries by almost two times [31].

It should be noted that CO₂ emissions produced by the transport sector account for approximately half of the region's emissions (ECLAC, 2022). Mexico, the country that most correlates with the behaviour of the region, is among the 10 countries with the highest emissions in the transport sector [28], while countries such as Venezuela, which correlate negatively, show a decrease linked to the socio-economic condition of the country, where fuel for automobiles is scarce (Hum Venezuela).

Even so, CO₂ emissions in kilotonnes (kt) in the region show a decrease strongly related to the phenomena caused by the Coronavirus pandemic, which reflects a drop in the amount of kilotonnes used [30]. Among the countries most related to the trend is Colombia, which has drawn up a policy for the reduction of carbon; through it, it seeks to generate actions that allow for low GHG emissions [31].

The spectrum of renewable energy production in the region presents certain conditions, where correlated countries such as Brazil, which is the country that consumes the most energy from renewable resources, show a drop due to the diversification achieved by the same: Brazil, which is the country that consumes the most energy from renewable resources, shows a drop due to the diversification achieved by the same, while countries with a negative correlation, among these Curaçao, which with the recent integration of wind energy projects produce 30% of the energy consumed [31].

Finally, for future research, it is recommended to understand the Latin American environment, in the aspect of GHGs, in order to determine more comprehensively the impact of these gases on the environment and on sustainable cities and the relationship it has with the variables applied in this research.

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In an increasingly interconnected world, migration significantly influences the social, economic, and political fabric of nations worldwide. *Global Migration and Settlement Policies* offers a comprehensive exploration of the complex frameworks that govern the movement and settlement of people worldwide. This book brings together a diverse array of scholars and policymakers to analyze the driving forces behind migration trends, the challenges faced by host countries, and the innovative policies designed to manage migration ethically and effectively. From the nuanced dynamics of refugee resettlement to the economic impacts of migrant labor, this book provides critical insights into how governments and organizations are responding to one of the most pressing issues of our time. It examines case studies from Africa, Europe, Asia, and the Americas, shedding light on best practices and highlighting the cultural, legal, and humanitarian considerations at play. Ideal for students, researchers, policymakers, and anyone interested in understanding the global migration phenomenon, this book offers both theoretical frameworks and practical solutions. It highlights the importance of collaborative and humane approaches to migration management in fostering inclusive societies and sustainable development. As migration continues to reshape nations and communities, this volume serves as a vital resource for navigating the policies, challenges, and opportunities that lie ahead. Empowered with insights and grounded in real-world examples, readers are equipped to contribute to informed debates and effective policymaking in the realm of global migration.

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