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The Use of Artificial Intelligence to Reduce Immigration-Related Overpopulation Issues in Small Island States

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Abstract

This study examines the potential application of artificial intelligence (AI) in managing immigration-related population pressures in small island states. It focuses on Malta as the principal case, with the United Kingdom, Mauritius, and Barbados providing comparative perspectives. Using a qualitative comparative research design based on secondary data, the study analyses migration trends, demographic changes, AI-supported forecasting, infrastructure planning, and associated governance challenges. The literature indicates that machine learning can support migration forecasting, while demographic and spatial modelling can help governments anticipate changes in population distribution and demand for essential services. The findings highlight the relevance of these applications to Malta, where immigration contributes significantly to population growth. However, Mauritius and Barbados face different demographic concerns, particularly population ageing and declining population levels, requiring distinct planning priorities. The study identifies data limitations, institutional capacity, algorithmic bias, privacy concerns, and ethical governance as major barriers to effective AI adoption. It concludes that AI cannot directly reduce immigration or population growth but can strengthen evidence-based decision-making, improve demographic forecasting, and support more effective infrastructure and resource planning. The study recommends country-specific AI strategies supported by reliable data, institutional investment, transparency, and human oversight.

Keywords: Artificial Intelligence; Immigration; Population Pressure; Small Island States; Migration Forecasting; Demographic Modelling; Infrastructure Planning; Population Management.

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Introduction

Background to the Study

Immigration has become an important demographic, economic, and political issue for island countries, particularly those with limited land, concentrated populations, and finite public infrastructure. Although migration contributes to labour supply, economic activity, and cultural diversity, sustained population growth can increase pressure on housing, transportation, healthcare, education, and other essential services when infrastructure expansion does not keep pace with demand (de Smalen et al., 2024; Sassen, 1990). These pressures are particularly relevant to Malta, where geographical limitations make population distribution and the management of public resources important policy considerations. The United Kingdom provides a useful comparative case because immigration management, border governance, and the economic implications of migration have remained significant areas of public policy debate (El-Enany, 2015; Statham, 2003).

The relationship between immigration and overpopulation, however, should not be treated as automatic. Population pressure depends on several interacting factors, including the rate of migration, existing population density, employment opportunities, housing availability, infrastructure capacity, and the geographical distribution of residents. Research on immigration and national poverty rates demonstrates the importance of examining migration within broader economic and welfare conditions rather than treating immigrants as the sole explanation for socioeconomic pressures (de Smalen et al., 2024). Similarly, Sassen (1990) places immigration within the wider context of global economic relationships, indicating that migration patterns cannot be adequately understood without considering economic structures and international movements of labour.

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The management of these pressures requires more than conventional immigration controls. Governments need reliable population information, accurate demand forecasting, and effective planning systems to determine where additional housing, healthcare facilities, educational resources, and transportation capacity may be required. Artificial intelligence (AI) offers potential applications in this area through data analysis, demographic forecasting, pattern recognition, and decision-support systems. However, its application to immigration management must be distinguished from using automated systems to restrict entry or make discriminatory decisions about migrants. Concerns surrounding restrictive immigration politics, refugee protection, and the treatment of migrant populations demonstrate why immigration technologies must operate within appropriate legal and human-rights safeguards (El-Enany, 2015; Statham, 2003).

The relevance of this research extends beyond Malta and the United Kingdom to other island countries, including Mauritius and Barbados, where geographical and resource constraints make population planning an important development concern. Migration management also involves social inclusion, communication, and access to public institutions, rather than border administration alone (Núñez, 2024; Braun-Strumfels et al., 2023). Consequently, this study examines how AI-supported population analysis and public-service planning could help governments anticipate and manage immigration-related population pressures without treating migrants themselves as the problem.

Statement of the Problem

A major challenge facing island countries is the difficulty of balancing population growth with the capacity of existing infrastructure and public services. When population changes are not adequately anticipated, governments may experience difficulties in planning housing provision, transportation networks, healthcare facilities, and educational services. Although immigration contributes to national economic activity, its relationship with poverty, employment, and the distribution of economic benefits remains complex (de Smalen et al., 2024; Lo Turco et al., 2024).

Traditional immigration policies have largely concentrated on border administration, entry requirements, asylum procedures, and national security, while the wider relationship between migration trends and long-term infrastructure planning requires further attention (El-Enany, 2015; Statham, 2003). This creates a policy challenge for countries such as Malta, where geographical limitations make effective resource allocation particularly important.

The central problem addressed by this study is the limited integration of AI-supported population forecasting and resource-planning approaches into the management of immigration-related population pressures in small island states. The study therefore investigates how AI could strengthen demographic planning, improve the allocation of public resources, and support evidence-based immigration policies while protecting migrants' rights.

Aim of the Study

The aim of this study is to examine how artificial intelligence can support the management of immigration-related population pressures in small island states, with particular attention to Malta, the United Kingdom, and selected island nations. The study focuses on the potential contribution of AI to population forecasting, immigration data analysis, infrastructure planning, and the allocation of public resources (Sassen, 1990; de Smalen et al., 2024).

Research Objectives

The specific objectives are to:

- Examine the relationship between immigration patterns and population pressures in selected island countries.
- Identify potential applications of AI in immigration data analysis and population forecasting.
- Assess how AI-supported planning could improve the allocation of housing, healthcare, education, and transportation resources.
- Examine the institutional, ethical, and technological challenges associated with using AI in immigration management.
- Evaluate the implications of AI-supported immigration planning for sustainable population management and migrant inclusion.

Research Questions

The study will address the following questions:

- How do immigration patterns contribute to population pressures in selected island countries?
- How can AI support immigration data analysis and population forecasting?
- To what extent can AI improve the planning and allocation of public infrastructure and essential services?
- What institutional, ethical, and technological challenges may limit the application of AI in immigration management?
- How can governments balance AI-supported population management with migrants' rights and social inclusion?

Significance of the Study

This study is relevant to policymakers, immigration authorities, urban planners, and public-service administrators responsible for managing population changes in geographically constrained countries. Its findings could provide a basis for considering AI-supported forecasting and resource allocation as complementary instruments in immigration and development planning (de Smalen et al., 2024; Sassen, 1990).

The study also contributes to discussions about the social consequences of immigration policies by considering how technological decisions may affect migrant inclusion, access to public services, and the treatment of migrant communities

(El-Enany, 2015; Núñez, 2024). Its central contribution is to shift attention from immigration control alone towards the management of population-related infrastructure demands.

Scope of the Study

The study will focus on Malta, the United Kingdom, and selected small island developing states, particularly Mauritius and Barbados. It will examine AI applications in immigration data analysis, demographic forecasting, population distribution, infrastructure planning, and public-service allocation.

The research will consider the policy, institutional, technological, and ethical conditions that influence the use of AI in these areas. It will not treat AI as a replacement for immigration authorities or as an independent mechanism for determining who should be permitted to enter or remain in a country.

Conceptual Focus of the Study

The study is structured around the relationship between immigration information, AI-supported analysis, government planning, and population-related resource pressures.

Literature Review

Immigration and Demographic Pressure in Small Island States

Immigration is an important factor in demographic change, particularly in island economies where limited geographical space can complicate the expansion of housing, infrastructure, and public services. However, the consequences of immigration depend on the relationship between population growth, economic activity, land availability, and government planning capacity rather than migration numbers alone (Sassen, 1990; de Smalen et al., 2024).

Speelman et al. (2021) examine the relationship between migration and demographic change in small island futures, using the Maldives as a case study. Their research employs agent-based simulations to explore possible demographic developments up to 2050, considering migration decisions, environmental conditions, and policy scenarios. The study is particularly relevant because it demonstrates the importance of incorporating migration into long-term population planning in small island environments. It also identifies the limitations of understanding island population systems without considering the interaction between internal migration, international migration, and environmental change.

Malta provides a particularly important contemporary example. The International Monetary Fund (2026) reports that Malta's population increased by approximately 26% over the decade to 2024, reaching more than half a million residents, with the foreign-resident population increasing from 5.5% in 2013 to 28.1% in 2024. The report connects this expansion to foreign-worker inflows and identifies pressure on infrastructure and public services as an important challenge to the country's growth model.

The European Commission (2026) similarly identifies increased population density, pressure on land use, natural resources, and public services as consequences of Malta's rapid population expansion. These findings demonstrate why immigration-related demographic change requires closer integration with infrastructure and resource planning.

The United Kingdom offers a useful comparative case for examining immigration administration, population distribution, and the relationship between migration and public policy, although it should not be classified as a SIDS. Mauritius and Barbados provide additional geographical comparisons because they are small island developing states with different economic and demographic conditions.

The economic literature also cautions against treating immigration as an exclusively negative influence. De Smalen et al. (2024) examine immigration's contribution to poverty rates across 17 European welfare states, while Lo Turco et al. (2024) investigate immigration and the skill premium. Sassen (1990) further situates migration within international economic relationships. Collectively, these studies support an assessment that considers both the economic contribution of migration and the capacity of receiving countries to accommodate population changes.

AI and Machine-Learning Applications in Migration Forecasting

Artificial intelligence provides opportunities to improve the analysis of migration patterns by processing large datasets and identifying relationships between demographic, economic, environmental, and political factors. Unlike conventional administrative approaches that often depend on historical migration statistics, machine-learning models can examine multiple variables to identify patterns that may inform future migration scenarios (Bosco et al., 2024).

Bosco et al. (2024) develop a machine-learning architecture for forecasting irregular border crossings and asylum requests in Europe. Their research demonstrates how predictive modelling can support policymakers by providing advance information about possible migration developments. The study is relevant to Malta and the United Kingdom because both operate within European migration-policy environments, although the model's focus on irregular crossings and asylum requests should not be confused with forecasting all forms of immigration.

Beduschi (2021) examines the wider application of artificial intelligence in international migration management, including administrative processes and migration governance. This perspective establishes the relevance of AI to migration administration, but it also raises questions about the appropriate use of automated systems when decisions affect individual migrants.

For small island states, the practical application of migration forecasting would extend beyond predicting border arrivals. Governments could use migration estimates alongside employment trends, settlement information, and population statistics to anticipate changes in the number and distribution of residents. Such information could help determine whether existing housing, healthcare, education, and transportation facilities are likely to experience increased demand. The contribution of AI would therefore lie in improving the information available for planning rather than independently controlling migration (Bosco et al., 2024; Beduschi, 2021).

AI Adoption, Institutional Change and Decision-Making

Using AI-enabled population planning successfully will not only depend on having the necessary data, but also on having the necessary knowledge. This means that the institutions and individuals involved will need to be ready, with the right skills, to adopt digital tools in their work. Research by Bacchoo et al. (2026) on Innovation in Higher Education in terms of Academic CHANGE Model, in which they call for: 'Institutional change and capacity for adapting to the new order,' is relevant here. They write in terms of business education but they are quite generally relevant as they address the organisational change.

Similarly, Bacchoo et al. (2025) explore building global citizenship in higher education. While the focus of this work is on cultivating an international mindset and global interactions, the article takes a more global view of the potential role for international cooperation and well-informed decision-making in supporting responses to migration as a phenomenon. An additional source of insight from the behavioural economics literature arises from a study on supporting wealth management platforms with behavioural insights (Bacchoo and Mishra, 2025). Though related to financial decision-making, this work explores how insights enabled through technology can assist decision-making on contexts of high complexity. Both of these papers add to the migration and demographic literature by drawing our attention to institutional capacity and international cooperation, responsible decision-making, as additional supporting factors for responsible AI.

Predictive Population Modelling and Infrastructure Demand

Migration forecasting and population forecasting address different but connected planning problems. Migration forecasting estimates movements of people into, out of, or within a country, whereas population modelling considers how these movements interact with births, deaths, household composition, and geographical distribution. Both are important when determining future infrastructure requirements (Speelman et al., 2021; Lomax et al., 2022).

Lomax et al. (2022) develop an open-source model for projecting small-area demographic and land-use changes. Their research highlights the importance of detailed population projections for infrastructure planning, particularly in energy, transportation, and water provision. The authors identify a limitation in conventional national projections: they may not provide sufficient geographical detail to identify where infrastructure demand is likely to increase. This is particularly relevant to small island states, where population concentration in specific districts can create uneven pressure on available resources.

Research by Li et al. (2021) on regional population forecasting using machine-learning strategies also demonstrates the potential of computational approaches to improve population projections for urban and regional planning. Their work provides a basis for considering machine-learning techniques alongside conventional demographic forecasting methods when assessing future population changes.

For Malta, such modelling could help estimate the effects of different migration scenarios on residential demand, transportation capacity, and public-service requirements. In Mauritius and Barbados, similar approaches could assist policymakers in identifying areas where population distribution and infrastructure capacity require closer attention. However, these applications would depend on reliable migration records, census information, land-use data, and appropriate forecasting assumptions (Lomax et al., 2022; Li et al., 2021).

An important implication is that population forecasting should not be limited to estimating how many people may live in a country. It should also examine where people are likely to settle and which services they are likely to require. This geographical dimension is essential to the proposed study because national population growth does not necessarily produce equal infrastructure pressure across all communities.

AI-Supported Urban Planning and Smart-City Development

Artificial intelligence is increasingly examined as a decision-support technology for urban planning, particularly in areas involving transportation, land-use management, environmental monitoring, and infrastructure coordination. Son et al. (2023) review algorithmic urban planning for smart and sustainable development and identify applications involving urban data analysis, planning decisions, infrastructure management, and urban monitoring. Their review demonstrates that AI can contribute to planning processes when supported by appropriate data and collaboration between relevant stakeholders.

Bibri et al. (2024) examine the integration of artificial intelligence, artificial intelligence of things, and urban digital twins in sustainable smart-city planning. Their review highlights how these technologies can support data-driven environmental planning and the management of interconnected urban systems, including transportation,

energy, and other infrastructure. The research is relevant to island countries because their limited resources make coordinated infrastructure management particularly important.

For immigration-related population planning, AI-supported urban systems could combine demographic projections with information on housing availability, traffic patterns, healthcare demand, and land use. For example, a predictive system could identify districts where projected population growth may exceed the capacity of existing transportation or healthcare facilities. Urban planners could then use this information to prioritise investment and adjust development plans.

Nevertheless, the presence of smart-city technology does not automatically produce better urban planning. Son et al. (2023) emphasise the importance of data and collaboration, while Bibri et al. (2024) identify implementation challenges associated with integrating different technological systems. Consequently, AI-supported planning requires institutional coordination, reliable information, technical capacity, and clear planning objectives.

Evidence from Malta, the United Kingdom and Selected Small Island Developing States

The geographical focus of this research requires a distinction between countries experiencing comparable population pressures and countries sharing the formal classification of small island developing states.

Malta is the principal case for examining the relationship between immigration-driven demographic expansion and infrastructure capacity. The International Monetary Fund (2026) documents the contribution of foreign-worker inflows to Malta's population growth and identifies infrastructure, housing, and public-service constraints. The European Commission (2026) also identifies pressures involving land use, natural resources, and public services. These reports provide a strong empirical basis for investigating how population forecasting could support national planning in Malta.

The United Kingdom provides a comparative case for examining migration governance, administrative systems, and the use of demographic information in infrastructure planning. Lomax et al. (2022) offer relevant evidence through their small-area demographic and land-use modelling research. However, the UK's geographical scale and institutional arrangements differ substantially from those of Malta, Mauritius, and Barbados, so comparisons must account for these differences.

Mauritius and Barbados provide the SIDS perspective. Their relevance lies in the relationship between island geography, development planning, resource constraints, and the need for reliable demographic information. Speelman et al. (2021), through their examination of the Maldives, provide a useful conceptual and modelling foundation for understanding how migration and demographic changes influence small-island futures.

The comparison should therefore not assume that all four countries experience identical immigration patterns or infrastructure challenges. Instead, it should examine whether AI-supported forecasting and planning approaches can be adapted to different island contexts.

Country	Research role	Main area of investigation
Malta	Principal small-state case	Immigration, population growth and infrastructure pressure
United Kingdom	Comparative island-country case	Migration governance and demographic planning
Mauritius	SIDS comparison	Population planning and resource management
Barbados	SIDS comparison	Population distribution and infrastructure capacity

Source: Researcher's proposed comparative framework.

Data Governance, Algorithmic Bias and Migrant Privacy

The use of AI in migration and population planning creates important questions concerning data quality, privacy, transparency, and discrimination. Migration-related information may include personal identities, employment records, residential histories, and other sensitive details. The use of such information in predictive systems requires appropriate data protection and accountability measures (Beduschi, 2021; El-Enany, 2015).

A major concern is algorithmic bias. If predictive systems are trained using incomplete or historically biased migration records, their outputs may reproduce existing inequalities or generate inaccurate assessments of particular migrant communities. This is especially important when governments use automated systems to inform decisions concerning migration administration, public-service access, or population distribution (Beduschi, 2021).

Núñez (2024) provides an additional perspective through the examination of translation policy and migration in the United States. The research highlights the importance of communication in migration administration, which is relevant when governments introduce digital systems intended to improve migrant access to information and public services.

For Malta and other island countries, AI-supported population planning should distinguish between analysing aggregate demographic patterns and making decisions about individual migrants. Predicting demand for housing or healthcare does not require treating migrants as security risks or using automated systems to determine their eligibility for protection. Appropriate governance should therefore include data minimisation, transparency, human oversight, and procedures for correcting inaccurate information (Beduschi, 2021; El-Enany, 2015).

Synthesis and Research Gap

The reviewed literature establishes several important relationships. First, immigration contributes to demographic change and can influence infrastructure demand, particularly in geographically constrained countries (Sassen, 1990; Speelman et al., 2021; de Smalen et al., 2024). Second, machine-learning applications can support the forecasting of migration movements, while demographic models can estimate future population distribution and infrastructure requirements (Bosco et al., 2024; Lomax et al., 2022; Li et al., 2021).

Third, AI-supported urban planning provides opportunities to integrate demographic information with infrastructure and public-service planning (Son et al., 2023; Bibri et al., 2024). However, these opportunities are accompanied by concerns involving data reliability, algorithmic bias, privacy, and institutional capacity (Beduschi, 2021; El-Enany, 2015).

The literature nevertheless reveals three specific research gaps.

Integration gap

Research on migration forecasting and demographic modelling frequently addresses these subjects separately. Further investigation is needed into how migration forecasts can be connected to population distribution and infrastructure-demand estimates in small island states.

Geographical gap

Existing evidence provides useful insights from the Maldives, Europe, and the United Kingdom, but comparative investigation involving Malta, Mauritius, Barbados, and the UK remains necessary to understand how different island contexts influence the application of AI-supported population planning.

Implementation and governance gap

Although existing studies identify potential AI applications, questions remain about the availability of reliable demographic data, institutional readiness, algorithmic accountability, and the protection of migrant information in small island settings.

This study addresses these gaps by examining how AI-supported migration forecasting, predictive population modelling, and infrastructure planning could contribute to managing immigration-related population pressures in selected island countries. Its central argument is that AI should support governments in anticipating demographic changes and planning public resources rather than being treated as a mechanism for restricting immigration.

Methodology

Research Design

The study adopts a qualitative comparative research design using secondary data to examine how AI can support the management of immigration-related population pressures.

Study Scope

The study focuses on Malta, the United Kingdom, Mauritius, and Barbados. Malta represents a small island state, the UK provides a comparative island-country perspective, while Mauritius and Barbados represent SIDS.

Data Collection

Data are obtained from peer-reviewed journals, government publications, demographic reports, and international institutional sources. The review focuses on migration trends, population projections, AI forecasting applications, infrastructure demand, and data governance.

Data Analysis

The study uses thematic and comparative analysis to identify patterns in AI-supported migration forecasting, population planning, infrastructure management, and associated challenges across the selected countries.

Results And Discussion

Immigration and Demographic Trends in the Selected Countries

The comparative findings reveal significant differences in population trends across the selected countries. Malta provides the principal case for examining immigration-related population pressure because its recent population growth has been largely migration-driven.

According to Malta's National Statistics Office, the country's population reached 588,254 at the end of 2025, representing a 2.4% increase over 2024. Net migration contributed 13,906 people, while natural population increase remained comparatively low. This demonstrates the significant contribution of international migration to Malta's recent demographic growth (National Statistics Office Malta, 2026).

The United Kingdom provides a broader comparative perspective. Its population reached approximately 69.5 million by mid-2025, with net international migration remaining the largest contributor to population growth, despite a decline in its contribution compared with the previous year (Office for National Statistics, 2026).

In contrast, Mauritius recorded a population decline of 0.21% in 2025, reaching 1,241,856. Its dependency ratio also increased, indicating growing demographic pressure associated with changes in the age structure of its population (Statistics Mauritius, 2026).

Barbados similarly recorded a population decline of 0.5% in 2024, reaching approximately 263,900. Its government report also identified declining birth rates and potential future labour shortages as important demographic concerns (Ministry of Economic Affairs and Investment, Barbados, 2024).

The results show that there are many factors that need to be taken into account when managing a population. Malta

Table 1: Comparative demographic conditions

Country	*Population trend*	*Main demographic concern*
Malta	Growing	Migration-driven population growth
United Kingdom	Growing	International migration and regional population distribution
Mauritius	Declining	Population ageing and increasing dependency
Barbados	Declining	Low birth rates and potential labour shortages

Source: National statistical publications and government reports.

needs to pay more attention to its growth and infrastructure capacity which are linked to migration, while Mauritius and Barbados are confronted with other demography-related issues. By simulating migration in the Maldives, Speelman et al. (2021) also highlight the need for understanding migration flows and where people are located when moving to smaller islands.

The application of AI in forecasting migration and population

Literature highlights machine learning as a promising tool to analyse the migration patterns and aid in future planning. Bosco et al. (2024) created a machine learning (ML) architecture to predict irregular border crossings and application for asylum in Europe. Their work will provide a good example on how predictive analysis has been used to help inform decisionmaking pertaining to migration. But its emphasis on irregular crossings and the numbers of asylum claims makes the conclusions a far cry from true forecasts of the extent of immigration and population increases in that country.

Beduschi (2021) additionally discusses the applications of AI in international migration administration, such as ID verification, border management and analysing visa and asylum purposes. These uses illustrate how algorithmic technologies are increasingly used in migration governance, but also concern (lack of) accountability and human rights.

In the case of Malta, machine-learning models might be designed that analyze historical immigration data, as well as employment, demographic change and settlement trends. These kinds of models could assist in helping authorities to forecast potential shifts in the flow of migration. However, the assumptions of their accuracy would require solid data as well as frequent checks in validation.

AI-Supported Population and Infrastructure Planning

The value of migration forecasts increases if four factors are simultaneously considered, namely: population projections, infrastructure planning. It is even more important for governments to have some idea of whether, and if so, where, a considerable number of people might take up residence in their country and what kind of services they might require.

Lomax et al. (2022) have created an open source model for forecasting small area demographic and land-use changes, in the context of the UK. Their activity shows the capability of their research to be used to make predictions on demographic trends, which can then support spatial development. Lastly, it is a modelling approach based on demographics, no sign of a machine learning system.

In the field of algorithmic urban planning applications, Son and his colleagues (2023) discussed the potential areas for applying AI and massive data to support sustainable urban development. These strategies, applied to the island of Malta, could assist in pinpointing areas of the island where there might be an increase in demand for housing, healthcare, education and transportation as a result of population growth.

The interesting thing is that there is a practical implication: Malta could use migration forecasting and spatial population modelling to better inform the decisions on the location of investments in infrastructure. Mauritius and Barbados could employ similar strategies to plan for the different healthcare, housing and workforce needs of the changing demographic of older adults and decreasing population.

Perhaps most interesting are the variations in comparative opportunities and the level of implementation challenges associated with them.

Comparative Opportunities and Implementation Challenges

The comparative analysis identifies different opportunities for AI-supported population management.

Despite these opportunities, AI adoption in small island states faces considerable institutional and technological challenges. UNESCO's (2024) assessment found that 71.2% of surveyed SIDS lacked quality data for AI, while 50% had no official initiatives relating to AI use. These findings highlight the importance of strengthening national data systems and institutional capacity before implementing advanced predictive technologies.

Other challenges include migrant data privacy, algorithmic discrimination, inadequate technical expertise and limited transparency. Beduschi (2021) emphasises the potential human-rights implications of AI in migration management. Consequently, predictive systems should support rather than replace accountable government decision-making.

Discussion of Findings and Policy Implications

Three major findings emerge from the comparative analysis.

Table 2: Proposed AI applications and country-specific priorities

Country	*Proposed AI application*	*Expected planning benefit*
Malta	Migration forecasting and spatial population modelling	Anticipating infrastructure demand associated with migration
United Kingdom	Regional demographic and land-use modelling	Improving spatial and public-service planning
Mauritius	Population and age-structure forecasting	Planning for ageing and changing service requirements
Barbados	Demographic and workforce forecasting	Anticipating labour and public-service needs

Note: These are proposed applications based on the demographic evidence and reviewed literature, not verified national AI deployments.

First, immigration-related population pressure is particularly relevant to Malta, where net migration has been a major contributor to recent population growth. This supports the use of migration forecasting to anticipate future demographic changes and infrastructure requirements.

Second, AI-based forecasting should be integrated with population and spatial planning. Predicting migration flows alone is insufficient because governments also need to understand settlement patterns and the resulting demand for public services. The studies by Bosco et al. (2024), Lomax et al. (2022) and Son et al. (2023) provide complementary evidence for these different planning functions.

Third, AI implementation must reflect national demographic conditions and institutional capacity. While Malta may prioritise migration-related infrastructure planning, Mauritius and Barbados require attention to population ageing, workforce sustainability and changing service demands. UNESCO's (2024) findings further demonstrate that data limitations remain a major obstacle to AI adoption in SIDS.

Overall, the findings suggest that AI can improve population management through migration forecasting, demographic modelling and more informed infrastructure planning. However, it cannot independently reduce immigration or solve overpopulation. Its contribution lies in helping governments anticipate demographic changes, allocate resources and develop more responsive public policies.

Conclusion

This study examined the potential of artificial intelligence (AI) to support the management of immigration-related population pressures in small island states, using Malta as the principal case and the United Kingdom, Mauritius, and Barbados as comparative cases. The findings indicate that immigration contributes significantly to Malta's population growth, increasing the importance of accurate demographic forecasting and infrastructure planning. In contrast, Mauritius and Barbados face different demographic challenges, particularly population ageing and declining population levels, demonstrating that AI applications must reflect each country's specific circumstances.

The study concludes that AI can support migration forecasting, population modelling, and the estimation of future demand for housing, healthcare, education, and transportation. However, AI does not directly control immigration or reduce population growth. Its value lies in helping governments anticipate demographic changes and make better-informed planning decisions. Effective application will depend on reliable data, institutional capacity, transparency, and appropriate safeguards for migrant rights.

RECOMMENDATIONS

Based on the findings, the study recommends that:

Strengthen migration and demographic forecasting

Malta should explore AI-supported forecasting systems that combine migration records, population statistics, and demographic trends to improve long-term planning.

Integrate forecasting with infrastructure planning

Governments should connect population projections with housing, healthcare, education, transportation, and other essential public-service requirements.

Develop country-specific AI strategies

Malta should prioritise migration-related population pressures, while Mauritius and Barbados should focus on ageing, workforce requirements, and changing public-service demand.

Improve data quality and institutional capacity

Small island states should invest in reliable demographic databases, digital infrastructure, and technical expertise to support effective AI applications.

Protect migrant rights and data privacy

AI-supported migration systems should operate with transparent procedures, human oversight, and safeguards against discrimination and inappropriate use of personal information.

Promote regional and international cooperation

Small island states should strengthen collaboration in AI research, data management, and technical capacity development to reduce the cost and difficulty of implementation.

Overall, AI should be treated as a decision-support tool for sustainable population management rather than a mechanism for restricting migration.

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