Spatial Variations of Public Goods and Inter-District Migration in Khyber Pakhtunkhwa

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Abstract

Inter-district migration within Khyber Pakhtunkhwa (KP), particularly toward urban centers like Peshawar, has traditionally been explored through social and cultural lenses, with limited attention given to the role of infrastructure disparities. This study addresses the gap in empirical research by examining how district-level public goods distribution influences migration patterns within KP. Based on an empirical analysis of socio-economic factors, this research investigates the extent to which disparities in infrastructure, such as access to education, healthcare, and utilities, drive migration flows. The findings reveal a significant negative relationship between household fuel usage for cooking and migration, suggesting that improved living conditions may reduce the propensity for migration. Conversely, variables such as fuel for lighting, household occupancy, and reasons for migration exhibit varying degrees of influence, highlighting the complexities of migration decisions. While larger households show a slight decrease in migration likelihood due to relocation challenges, stronger migration motivations align with the push-pull theory, albeit marginally. Moreover, several socio-economic variables, including water sources, marital status, employment, and access to sewerage, were found to have no statistically significant effect on migration. These results emphasize the multifaceted nature of migration, where some factors hold more sway over household decisions than others. The study provides valuable insights for policymakers, offering guidance on addressing regional development disparities and formulating policies that promote equitable infrastructure development and balanced growth across KP.

Keywords: Public Goods, Migration, Infrastructure Disparities, Binary Logistic Regression.

Introduction

Public goods play a vital role in shaping societal well-being and economic development. The equitable provision of public goods, such as infrastructure, education, healthcare, and utilities, is essential for promoting social welfare and reducing regional disparities (Besley & Ghatak, 2001). However, the distribution of public goods across regions often exhibits significant spatial variation, resulting in divergent levels of access and quality of essential services (Estache & Wodon, 2014). Understanding the factors contributing to spatial variation in the provision of public goods is

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crucial for policymakers and practitioners seeking to design effective interventions for promoting regional development and reducing inequalities (Attari et al., 2017; Wu & Gopinath, 2008).

Despite the recognition of the importance of public goods in fostering inclusive development, limited scholarly research has been conducted on the spatial variation of public goods provision (Moore & Ovadia, 2006). Existing studies primarily focus on national or provincial-level analyses, neglecting the sub-regional and intra-provincial dynamics. Therefore, this study aims to fill this research gap by examining the spatial variation in public goods provision within Khyber Pakhtunkhwa (KP), shedding light on the underlying factors contributing to such disparities.

Khyber Pakhtunkhwa (KP), located in northern Pakistan, is a region characterized by diverse geographic, socio-economic, and cultural features. The province's distinctive topography, ranging from mountainous terrain to fertile plains, coupled with its multiethnic population, presents a unique context for studying spatial variation in the provision of public goods (Hussain, 1993). Exploring the disparities in access to public goods in KP is particularly relevant due to its historical challenges in terms of infrastructure development, educational attainment, and healthcare access (Ghaus et al., 1996).

Furthermore, an understanding of the migration patterns to well-developed cities like Peshawar is crucial in comprehending the dynamics of public goods provision. Peshawar, as a major urban center in KP, attracts a significant influx of individuals from surrounding areas seeking improved employment opportunities, access to better healthcare and education facilities, higher interpersonal trust, justice, and more reliable public services (Usman et al., 2021). For instance, according to Pakistan Bureau of Statistics, of the total intra district migrations in Khyber Pakhtunkhwa, 12.37 are occurring towards Peshawar, the capital city of the aforementioned province. It is pertinent to mention that out of the total intra district migrations in KP, majority (i.e. 57.51%) are due to moving with the household head. This is followed by employment, marriage, business, and studies which stands at 16.53%, 8.87%, 7.14%, and 2.02% respectively (PSLM, 2020).

The phenomenon of migration to well-developed cities reflects the aspirations and motivations of individuals to improve their quality of life by accessing a range of vital public goods (Barro & Sala-i-Martín, 2004).

Migration to cities like Peshawar is driven by several factors. Employment prospects play a prominent role, as well-developed cities offer diverse job opportunities in sectors such as manufacturing, services, and government institutions (Harmatuck, 1996; Wu & Gopinath, 2008). Individuals seeking better economic prospects and livelihoods are attracted to these cities, where formal employment options are more abundant (Beine et al., 2008). Additionally, well-developed cities often provide a wider range of educational institutions, including universities and specialized training centers, which attract individuals pursuing higher education and skill development (Cutler & Lleras-Muney, 2006).

Access to quality healthcare is another significant factor influencing migration to cities like Peshawar. Urban areas typically have better healthcare infrastructure, including hospitals, clinics, and specialized medical services (Hassan et al., 2020). This attracts individuals in need of advanced medical treatments and improved healthcare outcomes, as well as those who prioritize access to comprehensive healthcare facilities for themselves and their families (Cutler & Lleras-Muney, 2006).

Interpersonal trust is also a crucial consideration in individuals' decision to migrate to well-developed cities. These cities often foster a higher level of interpersonal trust due to factors such as diverse social networks, active community participation, and established social norms (Usman et al., 2021). The presence of trust within the community creates a sense of security and

cooperation, which are essential for social and economic interactions. Individuals seeking a supportive and trusting environment are drawn to well-developed cities like Peshawar, perceiving them to offer better opportunities for personal and professional growth, enhanced social connections, and a greater sense of belonging (Exploring Migration Causes, 2020).

Furthermore, the presence of a fair and just legal system is an important determinant of migration to well-developed cities (Girsberger, 2017). Cities with well-established legal frameworks, efficient dispute resolution mechanisms, and reliable law enforcement agencies attract individuals who value a stable and predictable legal environment (Torbay, 2023). The perception that their legal rights will be upheld and that they can seek redress in case of any grievances motivates individuals to migrate to cities where these elements are more pronounced.

Efficient public administration is another influential factor. Cities with well-organized and responsive public administration systems are more likely to provide effective and timely public services, such as transportation networks, sanitation facilities, utilities (e.g., electricity and water supply), and other essential amenities (Day, 1992). The availability of reliable and efficient public services in urban areas is a strong pull factor for individuals seeking a higher quality of life. The convenience, accessibility, and overall better functioning of these services create a perception that cities can offer a more comfortable and well-managed living environment (Hassan et al., 2020).

Migration to well-developed cities like Peshawar is driven by factors such as employment prospects, access to quality healthcare, interpersonal trust, a fair and just legal system, and efficient public administration (Usman et al., 2021). The availability of diverse job opportunities, better educational institutions, improved healthcare infrastructure, and a sense of security and cooperation within the community attract individuals seeking better economic prospects, education, healthcare, and overall quality of life (Rakotonirina & Cheng, 2015). Understanding these migration patterns and their relationship to public goods provision is crucial for designing effective policies and interventions that promote regional development, reduce disparities, and ensure equitable access to public resources (Locke et al., 2013).

Theoretical Framework

There are various factors, which may be driving human migration across the countries and among the regions of a country. In the landscape of regional development, disparities in infrastructure, climate, religion, and familial rivalries serve as foundational elements (Easterly, 2002). These key factors exhibit spatial variation across diverse regions, influencing migration patterns and engendering a discernible regional development gap (Desmet & Wacziarg, 2007; Voigtlander & Voth, 2012). The present study investigates some important socioeconomic determinant of human migration among the district of Khyber Pakhtunkhwa, Pakistan.

It is noteworthy to mention that, spatial variation manifests in the form of varying infrastructure quality, climate conditions, religious affiliations, and levels of family rivalry across regions (Dabla-Norris et al., 2015; Ashraf & Galor, 2013). Regions may exhibit differing levels of accessibility to transportation networks, educational institutions, healthcare facilities, and utilities (World Bank, 2020). Climatic and meteorological disparities influence agricultural productivity and the overall quality of life (Dell et al., 2014). The presence of diverse religious beliefs impacts social cohesion, cultural norms, and community dynamics (Nunn & Wantchekon, 2011; Tabellini, 2010). Concurrently, entrenched family rivalries can either foster competition or hinder cooperation (Dal Bó et al., 2013).

Moreover, Spatial variations are instrumental in shaping patterns of migration as individuals and families seek to leverage better opportunities and improved living conditions (Kerr & Kerr, 2011;

Beine et al., 2016). Factors such as economic prospects, religious affiliations, and the pursuit of higher standards of living play a pivotal role in driving migration (Hatton & Williamson, 2005; Findlay, 2011).

Migration patterns, in turn, contribute to the emergence and perpetuation of regional development gaps (Bazzi & Blattman, 2014; Cortés & Tessada, 2011). These gaps encompass disparities in socio-economic indicators and the accessibility of essential services (World Bank, 2020; Ravallion, 2001). Residents of regions left behind often contend with inadequate transportation infrastructure, limited educational opportunities, restricted healthcare access, and diminished employment prospects (Dustmann et al., 2016).

Literature Review

A substantial portion of the world's population resides in urban areas. Over 90 percent of urbanization is taking place in developing countries, primarily among young adults. Migration, defined as the movement of people from one geographical location to another for temporary or permanent settlement, significantly contributes to this trend. In particular, rural-urban migration involves individuals relocating from rural areas, such as villages, to urban centers or cities. This movement is driven by the pursuit of better living conditions, increased opportunities, and improved facilities available in urban areas compared to rural settings. Understanding this dynamic is essential for addressing the socio-economic challenges and opportunities arising from such population shifts.(Rakotonirina & Cheng, 2015) many researchers investigate the migration of people from rural to urban areas. According Various factors contribute to human migration both between countries and within different regions of a country. In the context of regional development, disparities in infrastructure, climate, religion, and familial rivalries play significant roles. These key factors vary across different regions, impacting migration patterns and creating a visible gap in regional development. (Desmet & Wacziarg, 2007; Voigtlander & Voth, 2012).

The current study explores significant socioeconomic factors influencing human migration within the districts of Khyber Pakhtunkhwa, Pakistan. Peshawar, being a major city in KP, attracts many people from nearby areas. They come here seeking better job opportunities, access to improved healthcare and education, higher trust among people, fair treatment, and reliable public services (Usman et al., 2021). Similarly, according to (Harmatuck, 1996; Wu & Gopinath, 2008), people migrate to cities like Peshawar for various reasons. One major factor is the availability of employment opportunities. Developed cities offer a wide range of jobs in industries like manufacturing, services, and government, attracting individuals looking for work. These cities also offer better economic prospects and livelihoods compared to rural areas, making them appealing to those seeking stability (Beine et al., 2008). Moreover, cities like Peshawar have a broader range of educational institutions, including universities and specialized training centers, which attract people pursuing higher education and skill development (Cutler & Lleras-Muney, 2006).

Many researchers argued that transportation infrastructure, educational opportunities, healthcare accessibility, employment prospects, law and order situation, accompany family, natural disaster, information technology, housing and sanitation are the causal factors of inter-district migration in Khyber-Pakhtunkhwa.

Transportation infrastructure refers to the fundamental physical and organizational structures that enable the movement of people and goods. This includes a wide range of facilities, systems, and services such as roads, bridges, tunnels, railways, airports, seaports, and public transit systems like buses and subways. It also encompasses the management and maintenance of these systems to ensure they are safe, efficient, and reliable. According to (Aschauer, 1989), transportation

infrastructure is physical and organizational systems and facilities that support the movement of people and goods within a region or country. similarly with transportation infrastructure, educational opportunities also an important factor for their migration. Educational opportunities, as described by Hanushek and Woessmann (2008), refer to the accessibility and quality of educational experiences available to individuals within a specific region or community. Migration prospects are crucial for educational decisions in rural areas. Without the ability to migrate, the average level of education in these regions would decrease by 85% (Girsberger, 2017).

Healthcare accessibility refers to the ease with which individuals can obtain necessary medical services and treatments. This includes factors such as the availability of healthcare facilities and professionals, the affordability of care, the physical accessibility of services, the accommodation of patient needs, the cultural acceptability of care, and the awareness of available healthcare options. Healthcare accessibility, as explored by Cutler and Lleras-Muney (2006), refers to how easily individuals can access timely and appropriate healthcare services when needed. According to (Torbay, 2023), a record 108 million people worldwide had been forced to leave their homes by the end of 2022 because of the climate crisis, armed conflicts, persecution, and limited access to basic services, including health care, Similarly the most important factor due to which people are migrating is employment prospects. Employment prospects refer to the opportunities and potential for obtaining a job in a specific field or industry. They encompass the likelihood of finding employment, the expected job openings, the demand for particular skills, the potential for career advancement, and overall job market conditions. Factors influencing employment prospects include economic trends, technological advancements, industry growth, educational qualifications, and geographic location (Usman et al., 2021). According to (Kumpikaitė-Valiūnienė, 2016) People migrate to different regions or countries in pursuit of improved employment prospects, seeking higher-paying jobs, better working conditions, career advancement opportunities, and overall enhanced economic stability.

Law and order situation is also an important factor for migration. The law and order situation generally refers to the overall state of peace, stability, and adherence to the legal system within a particular jurisdiction or region ((Makki & Akash, 2022). The law and order situation in a region greatly influences migration decisions. People often move from areas with high crime rates, political instability, or conflict to safer places where the rule of law is upheld. A stable and secure environment not only provides peace of mind but also fosters economic growth, creating more job opportunities (Exploring Migration Causes, 2020). Furthermore, these migrations sometimes occur in the form of a whole family which is known as accompany of the family which refers in the context of migration that the practice of family members, often including parents, children, and close relatives, migrating together as a unit from one place to another (Kofman, 2004). Similarly, natural disasters are also a crucial factor for migration. Natural disaster refers to a catastrophic event caused by natural forces, such as geological, meteorological, or hydrological events, that results in significant damage, loss of life, and displacement of populations (Sardar et al, 2022). Natural disasters such as earthquakes, floods, hurricanes, and droughts can force people to leave their homes and seek refuge in safer areas. Migration due to natural disasters is often sudden and urgent, with affected individuals seeking regions with better infrastructure, relief resources, and employment opportunities to rebuild their lives. According to (Drabo & Mbaye, 2015) natural disasters are positively associated with the emigration rate.

Advancements in information technology have made it easier for people to learn about job opportunities and living conditions in different regions. Online platforms, social media, and digital communication allow individuals to connect with potential employers, access job listings, and

gather information about prospective destinations. This ease of access encourages migration by reducing the uncertainty associated with relocating to a new place. Information technology (IT) is a broad field that involves the use of computers and technology to manage, process, and transmit information (Alavi & Vogel, 1997).

Lastly, the availability of adequate housing and sanitation facilities is a crucial factor in migration decisions. Housing refers to a structure or place that provides shelter and accommodation for individuals or family (Dayaratne & Kellett, 2008). While Sanitation refers to the provision of facilities and services for the safe and hygienic management of human excreta, wastewater, solid waste, and the promotion of personal hygiene (Dobe et al., 2011).

People are more likely to move to areas where they can find affordable, safe, and hygienic living conditions. Good housing and sanitation not only improve quality of life but also contribute to better health outcomes, making certain regions more attractive to migrants.

Methodology

Estimation Technique

In this study, Binary Logistic Regression analysis is used to identify the factors driving inter-district migration in KP.

Data Sources

This study utilizes secondary data from the Pakistan Social and Living Standards Measurement (PSLM) survey for the year 2019-2020. Specifically, data relating to 32 districts of Khyber Pakhtunkhwa, Pakistan is extract from PSLM to examine the impact of public goods provision on migration patterns.

Variables of the Study

Socio-Economic Impact

The ramifications of regional development gaps extend to various socio-economic dimensions (Glaeser et al., 2009). Disparities manifest across multiple facets, including:

Transportation infrastructure: Transportation infrastructure refers to the physical and organizational systems and facilities that support the movement of people and goods within a region or country (Aschauer, 1989)

Educational opportunities: Educational opportunities, as discussed by Hanushek and Woessmann (2008), refer to the accessibility and quality of educational experiences available to individuals within a given region or community.

Healthcare accessibility: Healthcare accessibility, as examined by Cutler and Lleras-Muney (2006), refers to the ease with which individuals can obtain timely and appropriate healthcare services when needed.

Employment prospects: Employment prospects, as explored by Autor et al. (2013), refer to the opportunities and chances that individuals have to secure gainful employment or work in a particular region or labor market. (Autor et al., 2013).

Law and order situation: The law and order situation generally refers to the overall state of peace, stability, and adherence to the legal system within a particular jurisdiction or region((Makki & Akash, 2022)

Accompany family: Accompany family in the context of migration refers to the practice of family members, often including parents, children, and close relatives, migrating together as a unit from one place to another. (kofman, 2004)

Natural disaster: natural disaster refers to a catastrophic event caused by natural forces, such as geological, meteorological, or hydrological events, that results in significant damage, loss of life, and displacement of populations. (Sardar et al)
Information Technology: Information technology (IT) is a broad field that involves the use of computers and technology to manage, process, and transmit information (Alavi & Vogel, 1997).
Housing: Housing refers to a structure or place that provides shelter and accommodation for individuals or family (Dayaratne & Kellett, 2008).
Sanitation: Sanitation refers to the provision of facilities and services for the safe and hygienic management of human excreta, wastewater, solid waste, and the promotion of personal hygiene (Dobe et al., 2011).

Econometric Model

The study aims to investigate the public good spread across districts and its influence on migration patterns. The study utilizes binary logistic regression model to analyze the relationship between public good spread and migration patterns and later, the study compare and ranked.
To achieve the study objectives, the study will employ the subsequent econometric model.
a) To find out the public good spread on migration patterns

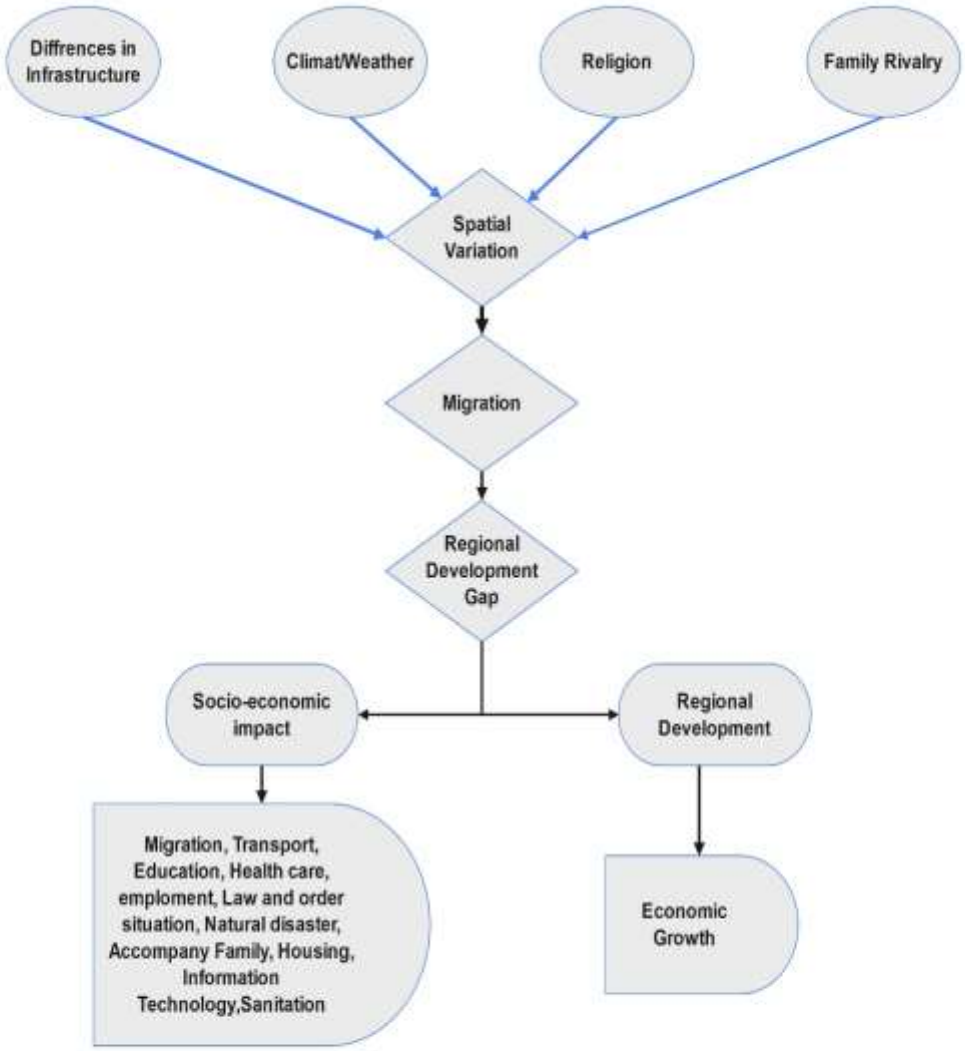
$$MIGT = \beta 0 + \beta 1\ (TI) + \beta 2\ (L\&O) + \beta 3\ (ND) + \beta 4\ (AF) + \beta 5\ (EP) + \beta 6\ (HA) + \beta 7\ (EMP) + \mu$$

Table 1: Variables and Justification

Variable	Description	Justification
Migration (MIGT)	People movement across regions	(Castelli, 2018)
Transportation infrastructure (TI)	The availability of roads and goods transport network	(Hong et al., 2011)
Law and order situation (L&O)	Migration due to lack of law and order situation in a region	(Makki & Akash, 2022)
Natural disaster (ND)	Migration in case of natural disasters.	(Drabo & Mbaye, 2015)
Accompany family (AF)	Migration complement for the sake family.	(Gardner, 2011)
Employment prospects (EP)	Migration for better employment opportunities	(Halseth, 1999)
Healthcare accessibility (HA)	Migration for better healthcare availability.	(Zhao et al., 2009)
Educational opportunities (EMP)	Migration for better educations.	(Syed et al., 2007)
Information Technology	Migration for better facilities of technology.	(Alavi & Vogel, 1997)
Housing	Migration for better housing	(Dayaratne & Kellett, 2008)
Sanitation	Migration for better sanitation	(Dobe et al., 2011)

Conceptual Framework

Figure 1: Conceptual Framework



Results

The analysis aimed to explore the impact of various socio-economic and infrastructural factors on migration patterns in Khyber Pakhtunkhwa (KP). The findings presented below reflect the relationships between these variables and migration decisions, with the objective of understanding the spatial variations in public goods and services that could explain migration in the region.

Table 2: Binary Logistic Regression Estimates

Migrated District	Odds Ratio	Std. Err.
Age	1.055725	.0316224
Gender	1.697227	.9379532
Fuel Lighting	2.04028	2.099844
Fuel For Cooking	.7909698	.1566947
Present Occupancy	.763144	.1472929
Reason Migration	1.427967	.3328327
Consultation	1.08563	.1315633
Income Used Expenses	.3780483	.2265488
Main Source Water	.9934931	.107496
Marital Status	.3990738	.3231519
Employment Status	1.608963	.5226377
Sufficient availably	.549012	.5539534
Connection Sewerage	1.546135	.7409458
Water Cooking	1.048536	.1725033
Constant	.34	.898

Demographic and Social Factors

Age

The odds ratio of 1.0557 for age indicates that as an individual's age increases by one unit (typically one year), the odds of migrating increase by approximately 5.57%. This suggests that older individuals may have slightly higher tendencies to migrate, potentially due to changing life circumstances, such as pursuing better opportunities, supporting families, or retirement plans. This association may reflect age-related priorities or motivations that align with migration decisions.

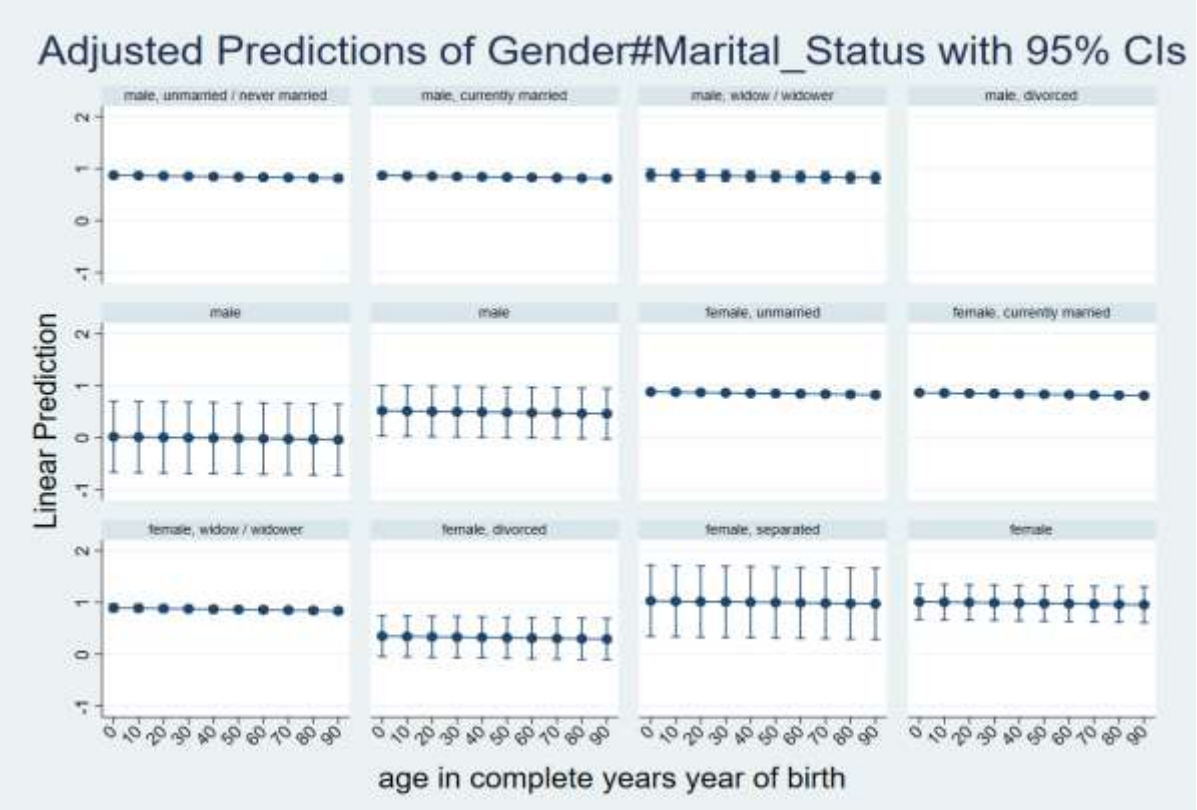
Gender

The odds ratio of 1.6972 for gender means that males are approximately 69.72% more likely to migrate compared to females. This result may reflect traditional or cultural factors where men often take on responsibilities that require mobility, such as seeking work or relocating to support their families. Alternatively, it could be linked to broader economic roles that encourage migration among men more than women.

Marital Status

The odds ratio of 0.3991 for marital status indicates that being married reduces the odds of migration by approximately 60.09% compared to unmarried individuals. Married individuals may prioritize family stability and be less likely to move unless necessary. This relationship underscores how family dynamics or responsibilities can influence migration decisions. The figure 1 below shows margins-plot for gender and marital status.

Figure 2: Prediction of Gender and Marital Status



Infrastructure and Resource Availability

Fuel for Lighting

The odds ratio of 2.0403 for fuel used for lighting suggests that individuals with better access to or use of specific types of fuel for lighting are 104.03% more likely to migrate. This could indicate that migration is associated with areas where people improve living conditions, including access to better infrastructure like lighting. It could also signify that households with better resources or aspirations are more inclined to move for further improvement.

Fuel for Cooking

The odds ratio of 0.7910 for fuel used for cooking means that for every unit increase in the quality or availability of cooking fuel, the odds of migration decrease by approximately 20.90%. This may suggest that households with better access to cooking resources are more likely to stay in their current location, as improved cooking facilities may reduce the need to migrate for better living conditions.

Present Occupancy

The odds ratio of 0.7631 for present occupancy suggests that individuals who have stable housing arrangements are 23.69% less likely to migrate. This relationship highlights the role of secure housing in reducing the desire or need for migration, as individuals with established living arrangements may have fewer incentives to move elsewhere.

Main Source of Water

The odds ratio of 0.9935 for the main source of water suggests a negligible effect on migration, with a 0.65% decrease in odds for migration with each unit increase in water quality or availability. This indicates that water access alone may not strongly influence migration decisions, as it may already be relatively stable or not a pressing factor in the region.

Connection to Sewerage

The odds ratio of 1.5461 for connection to sewerage indicates that individuals with access to improved sewerage facilities are 54.61% more likely to migrate. This may seem counterintuitive, but it could reflect that areas with better infrastructure often serve as stepping stones, encouraging migration by enabling individuals to access further opportunities.

Water for Cooking

The odds ratio of 1.0485 for water used for cooking suggests that for every unit increase in the quality or availability of cooking water, the odds of migration increase by 4.85%. While this is a small effect, it may reflect the indirect role of water access in improving living conditions, which can influence migration patterns.

Economic and Employment Factors

Income Used for Expenses

The odds ratio of 0.3780 for income used for expenses implies that households allocating a larger portion of their income to daily expenses are 62.20% less likely to migrate. This relationship suggests that financial constraints may limit a household's ability to migrate, as a high proportion of income spent on immediate needs could restrict the capacity for relocation.

Employment Status

The odds ratio of 1.6090 for employment status means that employed individuals are 60.90% more likely to migrate compared to those who are not employed. Employment opportunities often serve as a key driver of migration, with individuals seeking to enhance their income or career prospects through relocation.

Other Variables

Reason for Migration

The odds ratio of 1.4280 indicates that individuals with a strong or compelling reason to migrate are 42.80% more likely to do so. This reflects the logical link between having a clear reason—such as employment, education, or better living standards—and the decision to migrate.

Sufficient Availability

The odds ratio of 0.5490 suggests that individuals who perceive sufficient availability of goods and services are 45.10% less likely to migrate. This relationship highlights how better access to essential goods and services can act as a stabilizing factor, reducing the need or desire to move to other areas for improved living conditions.

The findings reveal that migration patterns in Khyber Pakhtunkhwa are influenced by a combination of factors related to infrastructure, social conditions, and access to public goods. Age was observed to have a positive association with migration, suggesting that older individuals may have a slightly higher propensity to migrate, possibly due to life transitions or changing priorities.

Gender, marital status, and other variables such as access to water, sewerage, and fuel show varying degrees of association with migration but highlight the multifaceted nature of the decision-making process.

Economic variables like employment status and income allocation also play a role, albeit not as strongly as expected, indicating that migration decisions may depend on a broader set of considerations. These include potential pull factors like better opportunities in urban centres or external influences like regional policies and community networks.

The results suggest that migration in KP cannot be attributed to isolated factors but is instead shaped by an interplay of social, economic, and infrastructural elements. This complexity underscores the need for further research to examine unmeasured influences such as cultural norms, policy interventions, and environmental challenges, which may provide a more comprehensive understanding of migration dynamics in the region.

Table 3: VIF Test

Variable	VIF	1/VIF
Fuel Lighting	1.50	0.666576
Fuel For Cooking	1.43	0.700219
Present Occupancy	1.32	0.758396
Reason Migration	1.28	0.780205
Consultation	1.23	0.811695
Income Used Expenses	1.23	0.814022
Main Source Water	1.20	0.834420
Marital Status	1.19	0.839875
Employment Status	1.18	0.849601
Sufficient availably	1.17	0.852171
Connection Sewerage	1.17	0.852372

Discussion

Socio-Economic Determinants of Migration

The study's findings reveal that migration decisions in KP are influenced by diverse socio-economic factors. Employment prospects emerged as a significant driver, corroborating findings by Usman et al. (2021), who identified urban areas as hubs for economic opportunities. Similarly, educational opportunities play a substantial role in migration, aligning with Cutler and Lleras-Muney's (2006) research on education's influence on migration patterns.

Healthcare accessibility had a marginal impact, reflecting that while healthcare is an important consideration, it may not be a primary determinant of migration in KP. This is consistent with Zhao et al. (2009), who found that healthcare availability, while important, often takes a secondary role to economic factors in migration decisions.

The relationship between income allocation and migration decisions highlights financial constraints as a significant barrier. Households allocating a large portion of their income to daily expenses are less likely to migrate, a finding supported by Dustmann et al. (2016). This underscores the role of economic stability in enabling mobility.

Infrastructure and Migration Patterns

Infrastructure quality and availability significantly influence migration patterns. Improved access to transportation and housing reduces the propensity to migrate, as highlighted by Aschauer (1989). However, better lighting and sewerage systems encourage migration, suggesting that such amenities act as pull factors to better-developed areas.

Interestingly, the negligible effect of water access on migration challenges conventional wisdom, suggesting that water availability in KP may already be stable or not perceived as a critical factor. This contrasts with findings in other regions where water scarcity is a major driver of migration (Dell et al., 2014).

Conclusion

The findings of this study highlight the multifaceted nature of migration within Khyber Pakhtunkhwa (KP), driven by disparities in public goods and socio-economic factors. These results align with broader literature on internal migration, supporting the notion that infrastructure availability, employment opportunities, and living conditions play pivotal roles in influencing migration decisions.

The negative relationship observed between household fuel usage for cooking and migration aligns with findings by Hong et al. (2011), who reported that improved access to basic amenities reduces the need for relocation. Conversely, the significant positive influence of fuel for lighting on migration resonates with Drabo and Mbaye's (2015) observations that improved access to infrastructure often acts as a stepping stone for further mobility.

The limited impact of variables such as water source and sewerage connection highlights the complexity of migration decisions. These findings are consistent with Moore and Ovadia (2006), who noted that public goods' role in migration varies depending on their accessibility and perceived utility. Similarly, the stronger association between employment status and migration emphasizes the role of economic opportunities, as highlighted by Beine et al. (2008). The interplay of these factors underscores that migration decisions are not solely driven by one's immediate needs but also by aspirations for improved socio-economic conditions, consistent with Rakotonirina and Cheng's (2015) conclusions.

Marital status was found to be inversely related to migration, with married individuals showing lower propensities to migrate. This aligns with Locke et al. (2013), who argue that familial responsibilities and the desire for stability often deter migration among married individuals. Gender differences in migration also conform to cultural norms observed in Pakistan, where men are traditionally more mobile due to their economic roles, as discussed by Ghaus et al. (1996).

Theoretical alignment with the push-pull framework is evident, as better infrastructure and economic opportunities in urban centers like Peshawar serve as pull factors. These findings align with Barro and Sala-i-Martín's (2004) work on regional development disparities and migration. Simultaneously, adverse conditions such as lack of employment or inadequate housing in rural areas act as push factors, consistent with Girsberger's (2017) research.

Recommendations

The study underscores the need for targeted policy interventions to address regional disparities in public goods. Investments in rural infrastructure, such as transportation and housing, could reduce migration pressures on urban centers. Similarly, enhancing employment opportunities and educational access in less-developed districts may mitigate migration by addressing core push factors. Policies should also focus on improving living conditions in urban areas to accommodate

incoming migrants and ensure equitable development. This includes expanding access to healthcare, utilities, and housing to meet the growing demands of urban populations.

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