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Urban Migration And Its Impact On Public Utilities in Rivers State

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ABSTRACT

This study investigated rural-urban migration and its effects on public utilities in Rivers State, Nigeria. This study is anchored on Ravenstein's Laws of Migration, Lee's Push-Pull Theory, Harris-Todaro Model, Lewis Dual Sector Model, and Sjaastad's Human Investment Theory. A cross-sectional survey design with a quantitative approach was adopted for the study. From a population of 3914854 adults aged 20 years and above in Rivers State, 1200 respondents were determined using multi-stage sampling procedure. Data was collected using a validated self-structured questionnaire titled Rural Urban Migration and Public Utilities Questionnaire (RUMPUQ) which consisted of 30 items with a reliability index of 0.84. Data analysis was conducted using two analytical software: SPSS and GIS. In the SPSS percentage, mean, standard deviation and ANOVA analysis were deployed while geospatial assessment of rural-urban migration was deployed in GIS software. The study revealed that rural urban areas like Port Harcourt, Obio-Akpor, and Ikwerre. Predominantly male migrants (61.7%), middle-aged (30-39 years, 50.5%), and mostly educated (secondary education, 60.3%) individuals migrated to urban areas due to inadequate social infrastructure (37.6%), unemployment (24.3%), and seeking better living conditions (15.7%). This migration is straining urban utilities, causing overcrowding of most facilities (mean score: 4.29 ± 0.472), frequent electricity outages (mean score: 4.50 ± 0.500), and poor transportation network, waste management, and healthcare. The pattern of rural urban migration particularly the reasons for migration and duration of migration significantly differed based on LGAs ($P < 0.05$) but was not based nature off migration ($P > 0.05$). Based on the findings, it was concluded that rural-urban migration have significant negative impact on public utilities in Rivers State. It was recommended among others that government should invest in infrastructure and create more job opportunities in rural areas to reduce the menace of migration. This study contributes to understanding the dynamics of migration and provides insights for urban planning and development in Rivers State.

Keywords: Public Utilities, Rural Urban Migration, urban planning

INTRODUCTION

Rural-urban migration has become one of the most visible social and spatial changes shaping cities across Nigeria, with important consequences for how governments plan, finance, and deliver basic services. As urban centres grow through both natural increase and in-migration, demand rises for public utilities such as potable water, electricity, transport systems, and waste management, often faster than infrastructure expansion and institutional capacity can keep up. This creates a practical policy problem: migration is not inherently negative, but when it concentrates people in places where service networks are already weak, it can deepen dissatisfaction, worsen inequality in access, and intensify conflict over scarce urban resources

(Okoye et al., 2025). In Port Harcourt and other urban nodes in Rivers State, these pressures are especially relevant because the state's urban growth and economic pull factors continue to attract migrants, while service delivery challenges remain a recurring public concern (City Population, 2024).

Conceptually, rural–urban migration refers to the internal movement of people from rural communities to urban destinations in search of improved livelihoods, opportunities, and services. Much of the literature explains this pattern using “push–pull” dynamics: push factors include rural unemployment, low agricultural productivity, poor rural infrastructure, and insecurity, while pull factors include perceived access to jobs, higher incomes, education, and modern amenities in cities (Mitiku & Mulatu, 2021; Yusuf et al., 2025). Nigerian evidence similarly links migration to youth unemployment, poverty, insecurity, and uneven development between rural and urban areas, suggesting that governance failures and weak rural service delivery can indirectly accelerate urban inflows (Okoye et al., 2025). However, there are also contentions in the literature about whether migrants move primarily because of economic rationality (jobs and wages) or because of wider quality-of-life expectations (education, healthcare, social networks, and lifestyle aspirations). In practice, both logics can operate simultaneously, meaning migration patterns are often shaped by layered motivations rather than a single cause (Yusuf et al., 2025; Mitiku & Mulatu, 2021).

The impacts of rural–urban migration on public utilities are widely debated because they are experienced unevenly across neighbourhoods and service sectors. At the systems level, increased population density can strain water distribution, electricity load capacity, transport corridors, and waste collection, producing service interruptions and lower user satisfaction, particularly in low-income or informal settlements (Mitlin & Walnycki, 2020; Mthiyane et al., 2022). In African contexts, utility providers sometimes respond through adaptive or “experimental” approaches to extend services where formal systems struggle, but these arrangements can also create affordability and equity trade-offs for households (Mitlin & Walnycki, 2020). Empirical studies outside Nigeria show that urban in-migration can coincide with congestion, service delivery backlogs, and environmental burdens that disproportionately affect poorer residents, raising questions about distributive justice in urban service planning (Nakamura, 2020; Mthiyane et al., 2022). Within Nigeria, related urbanisation research highlights that rapid growth intensifies infrastructure deficits and complicates sustainable urban management, reinforcing concerns that utilities often lag behind demographic change (Auwalu & Bello, 2023). At the same time, some strands of “smart city” literature argue that improved coordination, utility preparedness, and innovation could reduce service stress, but this requires capacity, governance alignment, and investment that many cities struggle to sustain (Vishwakarma & Tyagi, 2021; Yorucu et al., 2026).

Although existing studies provide valuable insights, a clear gap remains for Rivers State: much of the Nigerian literature is concentrated on other locations (for example, Abuja and Lagos) or examines urbanisation broadly rather than measuring how migrants' presence relates to specific utilities (water, electricity, transport, and waste) using resident satisfaction as an outcome indicator (Auwalu & Bello, 2023; Yusuf et al., 2025). For instance, studies in Abuja emphasise socio-economic drivers and note service delivery pressures, but they are not designed to generate Rivers-specific evidence for planning and utility management (Yusuf et al., 2025; Adam et al., 2024). Similarly, governance-focused work links migration to weak public systems and infrastructure stress nationally, but does not isolate Rivers State conditions and service-sector experiences in a way that directly informs state-level utility planning (Okoye et al., 2025). Therefore, this study focuses on Rivers State to generate context-specific evidence that can support planning agencies and service providers to anticipate migration-driven demand, prioritize infrastructure upgrades, and design interventions that improve satisfaction and reliability of utilities. Accordingly, the aim of this study is to investigate the pattern of rural–urban migration and its effects on public utilities in Rivers State, Nigeria.

1.3 Aim and Objectives of the Study

The aim of this study is to investigate the pattern of rural-urban migration and its effects on public utilities in Rivers State, Nigeria. To achieve this aim, two specific objectives that guided are to:

1. Establish the major reasons for rural urban migration in Rivers State;

2. Assess the influence of rural-urban migrant on public utilities including water, electricity, transport and waste management using level of satisfaction.

METHODOLOGY

This study adopted a cross sectional survey design using a quantitative research approach. The study was conducted in Rivers State, Nigeria, which has an estimated population of over seven million people (City Population, 2024). The target population comprised adults aged 20 years and above in Rivers State, estimated at 3,914,854. A sample size of 1,111 adults was determined using the Taro Yamane formula, and respondents were selected using an appropriate sampling technique that ensured eligible adults currently resident in Rivers State had the opportunity to participate. Data were collected using a structured questionnaire designed to capture the key study variables, and the instrument demonstrated acceptable reliability with a coefficient of 0.82, indicating internal consistency. The data collection process was implemented online through Google Forms, enabling wider reach and efficient administration while ensuring that participation was voluntary. Completed responses were downloaded, cleaned, coded, and entered into SPSS for analysis. Data analysis involved descriptive statistics including frequencies, percentages, mean, and standard deviation to summarize respondent characteristics and key variables, while regression analysis was used to examine relationships among the study variables. Ethical approval for the study was obtained from the University of Port Harcourt Research Ethics Committee, and respondents provided informed consent with assurances of confidentiality and anonymity throughout the research process.

RESULT

Question 1: *What are the major reasons for rural-urban migration in Rivers State?*

Table 1.0: Major reasons for rural-urban migration in Rivers State

Reasons	F	%
Educational Advancement	74	6.8
Vocational Training and career development	125	11.5
Unemployment	264	24.3
lack of social infrastructure	409	37.6
lack of Community development	171	15.7
To join friends or relatives	44	4.0
Total	1087	100.0

Source: Researcher's computation (2024)

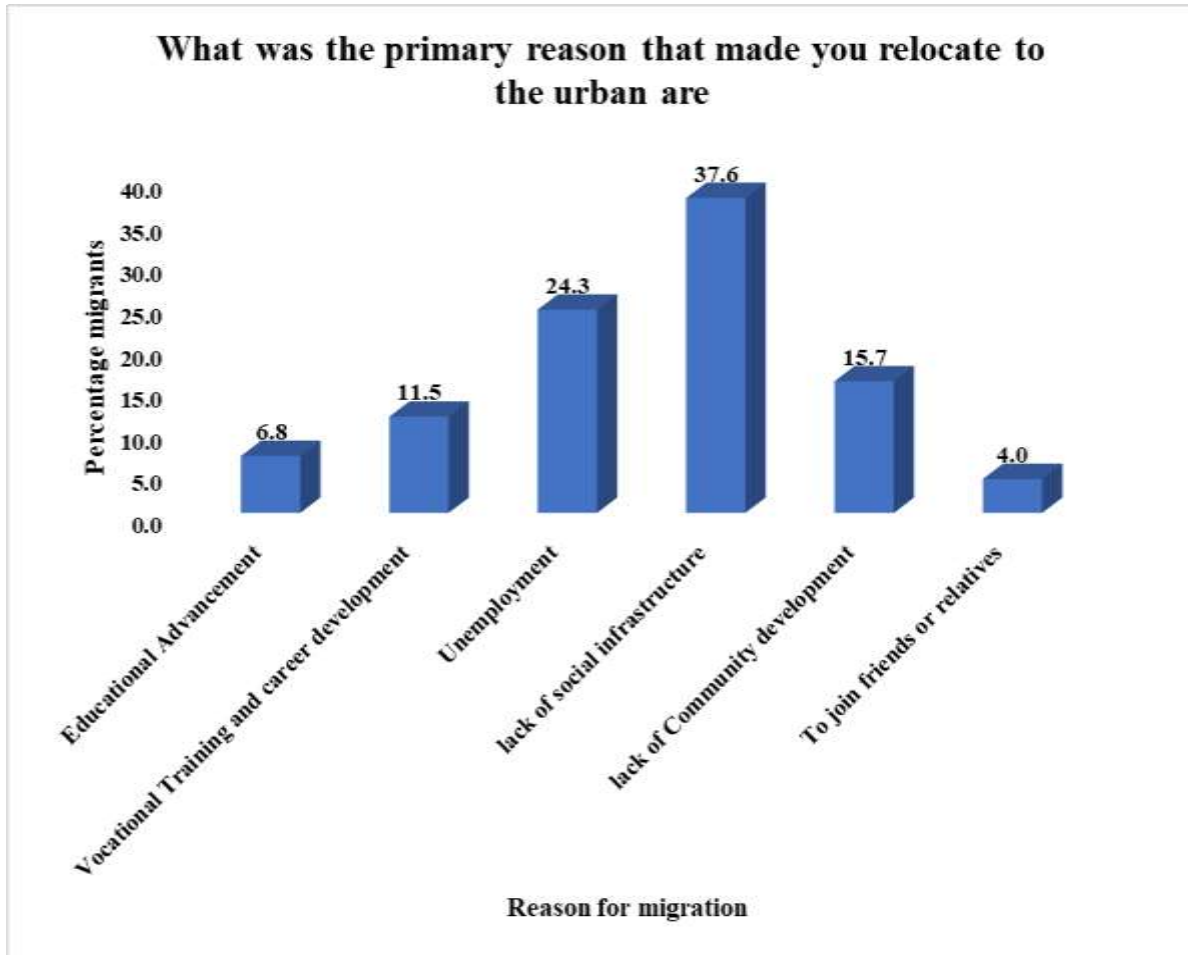


Figure 1.0: Major Reason for rural urban Migration in Rivers State

Source: Researcher’s computation (2024)

The data in table 1.0 and figure 1.0 show the primary reasons cited by migrants for relocating to urban areas in Rivers State. The reasons were lack of social infrastructure (37.6%), followed by unemployment (24.3%) and lack of community development (15.7%). These findings suggest that migrants are primarily driven by the desire for better living conditions and opportunities in urban areas, where infrastructure and development may be more robust. Additionally, vocational training and career development (11.5%) were also significant factors, indicating that many migrants seek urban areas for educational and career advancement opportunities. Joining friends or relatives (4.0%) was a less common reason cited for relocation. Overall, the data highlights the complex interplay of economic, social, and personal factors that influence rural-urban migration patterns in Rivers State.

Research question 2 *What is the Influence Of Rural-Urban Migrant On Public Utilities Including Water, Electricity, Transport And Waste Management Using Level Of Satisfaction?*

Table 2: Effects of rural urban migration on public utilities in Rivers State

Utility	Statements	SA	A	U	D	SD	Mean	SD
Educ ion	Rural-urban migration has led to overcrowded classrooms in urban schools.	604	321	67	66	29	4.29	0.472
	There is a noticeable decline in teacher-student ratios due to increased urban populations.	452	388	145	66	36	4.06	0.500
	Due to rural-urban migration, the number of unqualified teachers in in public schools have increased leading to low quality teaching.	338	539	99	44	67	3.95	0.608
	The quality of educational facilities has deteriorated with the influx of more students.	444	401	80	84	78	3.97	0.500
	Aggregate		460	412	98	65	53	4.07
Electri city	Urban areas experience frequent electricity outages due to rural-urban migration.	398	488	109	34	58	4.04	0.762
	The cost of electricity has increased significantly due to higher demand from urban growth.	702	301	22	46	16	4.50	0.500
	Response times for electrical repairs have become slower with higher urban population density.	338	367	188	104	90	3.70	1.040
	Customer service quality in the electricity sector has declined with increased demand.	564	321	55	82	65	4.14	0.791
	Aggregate		501	369	94	67	57	4.10
Transp ortatio n	Urban traffic congestion has worsened due to rural-urban migration.	354	412	99	94	128	3.71	1.000
	Public transport systems are increasingly unreliable alongside high cost due to higher usage.	402	321	143	109	112	3.73	0.958
	The safety of transportation systems has decreased with more users.	387	321	145	122	112	3.69	0.913
	Environmental pollution from transportation has increased due to more vehicles on the road.	452	388	145	66	36	4.06	0.498
	Aggregate		399	361	133	98	97	3.80
Waste Manag ement	Waste collection has become less efficient with the growing urban population.	338	539	99	44	67	3.95	0.804
	Urban areas have seen an increase in illegal dumping due to inadequate waste services.	444	401	80	84	78	3.97	0.895
	The cost of waste management services has risen due to increased waste production.	398	488	109	34	58	4.04	0.983
	Waste management facilities have become overstretched with urban expansion.	452	388	145	66	36	4.06	0.860
	Aggregate		408	454	108	57	60	4.01
Health care	Healthcare facilities have become overcrowded due to rural-urban migration.	338	539	99	44	67	3.95	0.842
	The quality of healthcare services has	444	401	80	84	78	3.97	0.398

declined with increased patient load.

Accessibility to healthcare services has decreased as urban populations swell.	398	488	109	34	58	4.04	1.051
The response time for medical services has increased due to higher demand.	452	388	145	66	36	4.06	0.783
Modern medical equipment is less available as demand outpaces supply.	338	539	99	44	67	3.95	1.149
Aggregate	394	471	106	54	61	3.99	0.845
Grand mean	432	413	108	68	66	3.99	0.773

**mean <3.0; Positive effects ≥3.0 Negative effect*

Source: Researcher's computation (2024)

The table 2, provided data on the effects of rural-urban migration on public utilities in Rivers State across five different categories: Education, Electricity, Transportation, Waste Management, and Healthcare. From the result, rural-urban migration had a negative impact on educational utilities. It was found that rural-urban migration contributes to overcrowded classrooms (4.29 ± 0.472). All other statements also scored above 3.0, indicating a negative impact due to declining teacher-student ratios (4.06 ± 0.500), increased unqualified teachers (3.95 ± 0.608), and deteriorating quality of educational facilities (3.97 ± 0.500). The aggregate mean for education is 4.07 ± 0.520 , reinforcing an overall negative impact on education.

The result also revealed that rural-urban migration had negative effects on electricity utilities in Rivers State, evidenced by a high mean score of 4.04 ± 0.762 to 4.50 ± 0.500 across statements related to outages, increased costs, slower response times, and declining customer service. The highest mean score (4.50 ± 0.500) relates to the increased cost of electricity, suggesting that respondents feel strongly that migration has led to higher electricity prices. The aggregate mean for electricity is 4.10 ± 0.773 , reflecting overall negative sentiment.

The impact on transportation was perceived negatively, with mean scores ranging from 3.69 ± 0.913 to 4.06 ± 0.498 . Major issues highlighted include worsening urban traffic congestion (3.71 ± 1.000), unreliability and high cost of public transport (3.73 ± 0.958), decreased safety (3.69 ± 0.913), and increased environmental pollution due to more vehicles (4.06 ± 0.498). The aggregate mean for transportation is 3.80 ± 0.842 , indicating overall dissatisfaction but slightly less severe than other categories.

Effects on waste management efficiency are evident to, with all statements showing mean scores around 3.95 ± 0.804 to 4.06 ± 0.860 . Key effects were less efficient waste collection (3.95 ± 0.804), increased illegal dumping (3.97 ± 0.895), rising costs (4.04 ± 0.983), and overstretched facilities due to urban expansion (4.06 ± 0.860). The aggregate mean of 4.01 ± 0.886 suggests that respondents generally agree that waste management has deteriorated due to migration.

Finally, the healthcare utility are also viewed to be negatively affected by rural-urban migration, as indicated by mean scores from 3.95 ± 0.842 to 4.06 ± 0.783 across statements concerning overcrowding (3.95 ± 0.842), declined quality of service (3.97 ± 0.398), decreased accessibility (4.04 ± 1.051), increased response times (4.06 ± 0.783), and scarcity of modern medical equipment (3.95 ± 1.149). The aggregate mean is 3.99 ± 0.845 , pointing to broad concerns about the adequacy of healthcare facilities amidst increasing urban populations.

The Grand Mean across all categories is 3.99 ± 0.773 , which indicates that, on average, respondents agreed the effects of rural-urban migration on public utilities to be negative. Standard deviations vary across statements and categories, with some aspects like response time in healthcare (1.051 ± 1.149) showing higher variability in responses, suggesting differing levels of impact felt by different respondents.

DISCUSSION OF FINDINGS

The data that is shown in Table 1 and Figure 1, which pertain to the causes behind rural-urban migration in the state of Rivers, can provide significant insights into the key drivers of this demographic transition.

These insights can be helpful in understanding the reasons behind this movement. A lack of social infrastructure is the reason that is most commonly given for relocating to metropolitan areas. This reason accounts for 37.6% of the responses that were received from the study. Because of limitations in rural infrastructure, which includes healthcare, education, and sanitation, inhabitants of rural regions are compelled to move to urban centers in quest of better amenities and living circumstances. This is because urban centers provide better living conditions and higher quality of life. The economic motives that drive people to relocate are highlighted by the fact that they migrate in pursuit of work opportunities and financial security. There is a tight relationship between the unemployment rate and the unemployment rate, which is 24.35 percent. The absence of community development is another aspect that is considered to be significant by 15.7% of those who participated in the survey. Due to the fact that rural regions are unable to give an enhanced quality of life at the present moment, this conclusion implies that there is a larger demand for such an improvement.

According to the findings of subsequent study, 11.5% of migrants migrate in order to take advantage of chances for job growth and occupational training. The relevance of educational and professional growth as a crucial determinant in the selection of migration locations is brought into focus by this. A great number of individuals have the objective of enhancing their skills and capacities, which are often simpler to obtain in metropolitan environments. This is in accordance with the goals that they pursue. However, social reasons, such as relocating to be closer to friends or family, are less powerful. Only 4% of respondents state that this was the reason they moved. This indicates that social reasons are not as influential as other reasons. There is a possibility that this lower proportion indicates a more individualistic approach to migration, one that is motivated by personal accomplishment rather than by shared or familial belongings.

Adesina and Owoeye (2019) analyze the ways in which the desire to seek improved public services and infrastructure is commonly correlated with the process of urbanization in Nigeria. The idea that infrastructure-related causes for migration are the most prevalent is supported by their findings, which are congruent with this belief. On the other hand, this stands in contrast to studies such as the one that was carried out by Howell (2023), which postulate that not all urban migrants enjoy the predicted improvements in their living situations. This situation can lead to issues such as the growth of slums and urban poverty. Urban regions are desirable because of the opportunities they may bring; yet, there is a danger that they may not always live up to the expectations of newcomers, which may possibly make urban issues even more serious. This is despite the fact that urban areas are appealing.

Migration is congruent with the economic variables, particularly unemployment, according to the classic economic account of migration, which believes movement to be a reaction to economic inequalities between different regions. Mukhtar et al. (2018) found that migration from rural to urban regions in Pakistan resulted in significant gains in employment and household welfare. This was the case in Pakistan. The facts that these researchers have uncovered lend credence to this concept. However, Garriga et al. (2023) provide a cautionary perspective, stating that although economic benefits are a significant pull factor, the actual economic integration of migrants can be difficult and complicated, and it frequently does not result in the increase in economic prosperity that was anticipated. This is a perspective that should be taken with caution.

One example of an adaptive response to globalization and the "knowledge economy" is the fact that migration decisions are influenced by factors such as educational attainment and the potential for professional advancement. Kemuma and Kihoro (2022) came to the realization that urban regions are increasingly being recognized as hubs for the development of human capital. This was another conclusion that they reached. It is consistent with their results that this finding was found. According to Lerch (2023), who asserts that this may cause rural areas to lose young, educated people, so further inhibiting their progress, the focus placed on personal and professional development may also be a factor in the phenomenon known as "brain drain" in rural areas. This is something that Lerch has seen and taken note of.

In spite of the fact that conventional economic models of migration often center their attention on income disparities, the mobility patterns that have been seen in Rivers State provide a more comprehensive understanding that goes beyond these models. The findings of writers such as Kasanga (2017) and Kemuma & Kihoro (2022), who have recorded the aforementioned phenomena, provide credence to the complex nature of migration dynamics. These authors have demonstrated the complexity of migration dynamics. It is clear from this more comprehensive perspective that decisions about migration are heavily influenced by social infrastructure as well as personal development objectives. Lerch (2023) contends that the integrated model of migration, which states that decisions to migrate are determined by a complex interplay of economic opportunities, social networks, and individual aspirations, is compatible with these findings. This model proposes that the decision to move is determined by a complex interaction of these factors. According to this theory (Adesina & Owoye, 2019; Mukhtar et al., 2018), people may be lured to urban centers because of the availability of better education, healthcare, and general quality of life. This theory examines the factors that may attract people to urban areas. This theory proposes that economic variables such as the availability of jobs and the opportunity for salary increases are significant; nevertheless, it is vital to note that these factors are only a small component of a wider set of determinants.

When these findings are taken into consideration, there are significant repercussions that can be attributed to the formation of policies and the construction of urban areas in the state of Rivers. When one takes into consideration the fact that migration is driven not just by economic concerns but also by the need for enhanced social amenities and opportunities for personal development, it becomes abundantly evident that rural areas require comprehensive development plans. According to Garriga et al. (2023) and Howell (2023), policymakers have the potential to address the underlying reasons for migration by enhancing rural infrastructure and providing local job possibilities. This is something that can be done. There is a possibility that this may lessen the pressure that urban regions are experiencing and will encourage the development of regions that are more balanced. If, for example, educational facilities and healthcare services in rural areas were to be improved, it could be possible for people who would otherwise be required to relocate in order to get access to these services to remain in their current location. According to Ezeanya and Onah (2020) and Owoyemi and Afolabi (2021), the development of local industries and the promotion of agricultural innovations may result in the creation of employment prospects that are not only accessible locally but also practical from a business perspective. The economic motivation to relocate would be greatly diminished as a result of this. The implementation of these sorts of initiatives not only mitigates the adverse effects of urban sprawl, but they also make a contribution to the long-term sustainability and resilience of rural communities, which ultimately results in a more equitable distribution of resources and opportunities across the state.

A clear illustration of the enormous consequences that rural-urban migration has had on public utilities in the state of Rivers is provided by the findings of the analysis that are shown in Table 2. This analysis includes critical sectors such as education, energy, transportation, waste management, and healthcare, and it provides a clear demonstration of the magnitude of these impacts. In view of the fact that these industries are suffering tremendous strain as a result of the increased needs of an expanding urban population, it is imperative that strategic planning and a more equal distribution of resources be implemented as soon as possible. Based on the high mean scores that were obtained from individuals who took part in the survey, it can be concluded that the adverse consequences are particularly severe in the sphere of education, where the issue of overcrowded classrooms is becoming an increasingly widespread concern. Overcrowding is a sign of larger systemic problems within the educational sector, including diminishing teacher-student ratios and an influx of unprepared instructors, both of which affect the quality of education. Overcrowding is a consequence of these deeper systemic problems. All of these issues are a consequence of the educational system as a whole producing them.

CONCLUSION

The movement of people from rural areas to urban areas is a complicated phenomena that impact public utilities in Rivers State in both good and bad ways. For the purpose of addressing the issues that migration presents, a holistic strategy is required, one that takes into consideration the development of infrastructure, the creation of jobs, education, and public awareness campaigns.

It is possible to draw the conclusion, on the basis of the findings of the study, that migration from rural areas to urban areas has major effects on public utilities in the state of Rivers in Nigeria. A dynamic migration of people from rural regions to urban areas was found to be occurring, with major metropolitan centers receiving a considerable number of migrants, according to the findings of the study. As a result of this migratory trend, a significant number of migrants have settled in the state's most important metropolitan centers and local government districts. There is a pattern of long-term urbanization among this group, as evidenced by the fact that the majority of migrants in Rivers State have been residing in metropolitan regions for a substantial amount of time. Migration from rural areas to urban areas has had a detrimental influence on public utilities in the state of Rivers, with the most severe repercussions being felt in the areas of water supply and transportation.

RECOMMENDATIONS

The following were recommended:

1. There is a need for the government to invest in infrastructure development, particularly in areas experiencing high levels of rural-urban migration. This includes improving water supply systems, expanding electricity generation and distribution networks, and upgrading transportation infrastructure.

REFERENCES

- Adesina, A. O., & Owoeye, J. O. (2019). Urbanization and access to basic infrastructure in Nigeria: A literature review. *Journal of Sustainable Development*, 12(1), 40-54.
- Akintunde, T. S., Lawal, M. O., & Akinrinde, O. O. (2022). *The impact of urbanisation on health security of urban dwellers in Nigeria. Studia Administracyjne*, 15, 31–47.
- Auwalu, F. K., & Bello, M. (2023). Exploring the contemporary challenges of urbanization and the role of sustainable urban development: A study of Lagos City, Nigeria. *Journal of Contemporary Urban Affairs*, 7(1), 175–188.
- Ezeanya, E. N., & Onah, P. E. (2020). Urban-rural migration and access to public utilities in Nigeria: A systematic literature review. *Journal of Population and Social Studies*, 28(4), 344-358.
- Garriga, C., Hedlund, A., Tang, Y., & Wang, P. (2023). Rural-urban migration, structural transformation, and housing markets in China. *American Economic Journal: Macroeconomics*, 15(2), 413-440.
- Howell, A. (2023). Impact of a guaranteed minimum income program on rural–urban migration in China. *Journal of Economic Geography*, 23(1), 1-21.
- Kasanga, R. K. (2017). Urbanization and public utilities in Tanzania: The case of Dar es Salaam city. *International Journal of Science and Research*, 6(4), 1154-1159.
- Kemuma, K. K., & Kihoro, J. M. (2022). Rural-urban migration and the provision of public utilities in developing countries: A systematic review. *Journal of Urban Management*, 14(1), 1-12.
- Lerch, M. (2023). The end of urban sprawl? Internal migration across the rural-urban continuum in Switzerland, 1966– 2018. *Population, Space and Place*, 29(1), e2621.
- Mitlin, D., & Walnycki, A. (2020). Informality as experimentation: Water utilities’ strategies for cost recovery and their consequences for universal access. *The Journal of Development Studies*, 56(2), 259–277.
- Mthiyane, D. B., Wissink, H., & Chiwawa, N. (2022). The impact of rural–urban migration in South Africa: A case of KwaDukuza municipality. *Journal of Local Government Research and Innovation*, 3, 56-68.

- Mukhtar, U., Zhong, Z., Tian, B., Razzaq, A., Naseer, M. A. U. R., & Hina, T. (2018). Does rural–urban migration improve employment quality and household welfare? Evidence from Pakistan. *Sustainability*, 10(11), 4281.
- Nakamura, A. (2020). Environmental disparities in an urban area, rural–urban migration, and urban unemployment. *Asia-Pacific Journal of Regional Science*, 4(2), 463–477.
- Nwaka, G. I., & Onyia, M. U. (2021). Rural-urban migration and sustainable development: A review of literature. *Journal of Environment and Earth Science*, 11(3), 70-80.
- Nwalusi, D. M., Okeke, F. O., Anierobi, C. M., Nnaemeka-Okeke, R. C., & Nwosu, K. I. (2022). A study of the impact of rural–urban migration and urbanization on public housing delivery in Enugu Metropolis, Nigeria. *European Journal of Sustainable Development*, 11(3), 59.
- Owoyemi, A. T., & Afolabi, T. O. (2021). Urbanization, rural-urban migration, and the provision of public utilities in developing countries: A review of empirical studies. *Sustainable Cities and Society*, 66, 102727.
- Oyedokun, T. T., & Olawoye, O. J. (2019). Rural-urban migration and water supply in Lagos metropolis, Nigeria. *Sustainable Cities and Society*, 46, 101401.
- Vishwakarma, S., & Tyagi, R. (2021). Smart cities’ success—How well utility companies are prepared. *IET Conference Proceedings, 2020(CP777)*, 149–156.)
- Yorucu, V., Bekun, F. V., & Yitmen, I. (2026). Migration, population growth, and threats for smart urban cities. In *Modern approach of resilient and sustainable smart cities* (pp. 49–67). Springer.