

EVALUATING POPULATION REDISTRIBUTION IN EGYPT: INSIGHTS FROM RESIDENT AND NON-RESIDENT PERSPECTIVES ON NEW URBAN COMMUNITIES

 Mohamed Khaled Kadry*¹,  Husam R. Husain²

¹Faculty of Architecture, German International University, Cairo, Egypt

²Faculty of Engineering, Architecture & Urban Design Program, German University in Cairo, Cairo, Egypt

Abstract. *Purpose:* Egypt has developed 44 New Urban Communities (NUCs) over the past 40 years to redistribute the population away from Cairo and the Nile Valley. However, many have not met their targets, with an average occupancy rate of 31%. Previous studies have questioned the effectiveness of NUCs and presented recommendations based on case studies and historical data analysis, with little emphasis on the opinions of direct stakeholders. Thus, this research aims to present evidence from the perspectives of residents and non-residents to assess the NUCs' ability to redistribute the population effectively. *Design / Methodology:* The study assessed the effectiveness of NUCs in distributing Egypt's population based on three variables: Livability, independent economic development and attraction and satisfaction. A questionnaire was designed to collect 633 valid responses from NUCs' residents and non-residents. *Findings:* The results showed that NUCs must improve their Livability by lowering living costs, making house prices more affordable and improving maintenance and public transportation. NUCs must expand their economic base by creating more job opportunities, offering necessities and providing more housing units. Moreover, NUCs attract and satisfy people moderately and are less effective in alleviating overcrowding in major Egyptian cities. *Originality/Value:* The study adds a participatory dimension to the literature using quantitative evidence from residents and non-residents. This helps to fill the strategic gap in developing new areas, as different parties usually have distinctive preferences. *Practical Implications:* Policy recommendations for urban development and population redistribution in Egypt should, for example, prioritize citizens' needs, consider the quality of urban life in the design phase, revise income categories, develop economic growth policies, prioritize cities' independence and improve Livability in NUCs.

Keywords: *Developing countries, Egypt, new urban communities, livability, population redistribution, urban development.*

***Corresponding Author:** Mohamed Khaled Kadry, German International University, Cairo, Egypt, e-mail: Mohamed.kadry@giu-uni.de, Lixmkke1997@gmail.com

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1. Introduction

New Urban Cities or New Urban Communities (NUCs) have emerged in response to the environmental and social effects of the Industrial Revolution. These settlements were created to address the rapid development, unsanitary living conditions and other legacies of industrialization (Mehdipour & Nia, 2013). The concept of NUCs has undergone various transformations as every country has sought to modify the ideas,

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concepts and applications of NUCs to consider their citizens' context, culture, needs and future wants. NUCs can be defined as settlements that have enough independence to develop conventional tasks in their context without a deep dependence on other settlements or cities (Kenawy, 2017). Based on their spatial redistribution, urban growth redirection, location and function, NUCs are often categorized into satellite, twin and independent cities. Satellite cities are close to existing agglomerations, while twin cities are urban expansions with their own economic and service bases. Independent cities are development-oriented centers with sustainability traits and long-term economic and social activities (Hafez, 2017).

“Cairo, the old traditional and compact city, has witnessed various urban extensions and suburban developments throughout its history”. Egypt's population has grown by 154% over the last 40 years, reaching 105 million people in 2023. Nearly 27% of this population is concentrated in the Greater Cairo Region (GCR), including the governorates of Cairo, Qalyubia and Giza.

“The emergence and development of various types of urban planning movements, after 1980, are all attempts to provide a physical model for the realization of a sustainable city” (Kafrawy *et al.*, 2022). Therefore, to redistribute the population and create new "civilized" centers in remote regions beyond existing towns and villages, the state established the New Urban Communities Authority (NUCA) in 1979.

NUCA has developed 22 NUCs over three generations, expected to absorb twelve million people and contribute to a 50% reduction in annual population growth by 2017 (Kenawy, 2017). A fourth generation of NUCs was launched in 2018, with plans to accommodate thirty million residents in another twenty-two new cities. Despite heavy investment in NUCs, including a budget four times that of the healthcare sector in 2015-2016, many have failed to meet their initial targets, with an average occupancy rate of 31% (Tadamun, 2015; City Population, 2022).

Previous studies have raised doubts about the effectiveness of NUCs in Egypt in redistributing the population. These studies have examined various aspects such as urban development policies (Nada, 2014; Salem & Monir, 2017), attraction and contribution (Badawy & Pinto, 2018), sustainability (Haseeb, 2017; Mohammed, 2019), housing affordability (Shawkat, 2020; Abdel Raheem *et al.*, 2020) and quality of life (Darwish *et al.*, 2019; Hegazy, 2020). Previous research has also proposed different explanations and conclusions to improve the effectiveness of NUCs. These suggestions include addressing weak coordination, enhancing organizational capacity and updating legal frameworks. Other recommendations include encouraging decentralization, growth and integrated development policies, investing in denser areas to improve Livability and create economic bases and adopting strategic approaches that address affordability regenerative strategies and balanced social mixes.

Thus, given that the average occupancy rate of the Egyptian NUCs is 31% and most existing literature relies on qualitative data and historical analysis, more studies that apply different perspectives are required to develop NUCs. Since different parties usually have different priorities and preferences (AlWaer *et al.*, 2021), gaining insights into residents' and non-residents' perspectives would make Egypt's NUCs more appealing and help redistribute the population away from the Nile Valley and major cities. Therefore, this study sought to fill this gap by answering the research question: How do residents and non-residents gauge the NUCs' ability to redistribute the population effectively? The study analyzed Livability, economic independence, attractiveness and satisfaction as common determinants of the NUCs' effectiveness, using data from a sample of residents

and non-residents. By providing answers to this research question, the study aims to add a participatory dimension to the literature using quantitative evidence to fill the gap in the strategic approaches to new city development.

The paper is structured to address the research question and achieve the study's goal. The second section reviews the relevant literature about NUCs in Egypt. The third section details the materials and methods, covering variable measurement, questionnaire design, sampling and descriptive statistics. The fourth section outlines the study's results and findings. The fifth section presents key findings, while the last section offers the conclusion and recommendations.

2. Literature Review

Land “displays and measures the level of improvements and the degree of the quality of the built environment” (Soliman, 2022). Thus, developing new cities in the Egyptian desert is often considered a solution to alleviate urban growth, reduce population density and enhance life quality for inhabitants. However, previous studies on urban design and planning have presented mixed views on the factors that influence the effectiveness of New Urban Communities (NUCs). Tipple (1986) argued that solving the problem of overpopulation requires more than just building new towns; satellite towns can only address Cairo's issues if complemented with growth controls and proper planning. El-Shakhs (1994) concluded that NUCs in Egypt require assistance attracting residents due to their desert location, distance from major cities and lack of water-based amenities. Egyptians, who are not accustomed to living in desert areas, prefer moderate climates and access to water bodies for recreational purposes. Soliman and Sharaf El-Din (1999) studied the policies of successful NUCs in other countries and found that Egypt needs to modify its policies to improve NUCs, including encouraging decentralization and directing population growth away from major cities by creating new settlement nuclei. Amin et al. (2004) showed that the participation of private investors in NUCs can improve urban development management criteria.

Barrada (2006) has asserted that better organization, growth management and spatial relationships are essential for efficiently developing new satellite towns in Egypt. Additionally, independent cities pose a challenge in Egypt, whereas smaller towns with existing settlements are more appropriate for developing countries like Egypt. Sims (2014) revealed that administrative authorities should prioritize enhancing existing NUCs and cities instead of introducing new towns to minimize resource depletion. Moreover, Ahmad and Dmitrieva (2014) conducted case studies from the UK and Egypt, indicating that successful NUCs in Egypt require new urban settlements, self-contained cities and monitoring of inner cities to prevent decline. Moreover, integrating sustainable development and urban planning is crucial for the new generation of cities. The findings of Nada (2014) supported the argument that several factors hinder the implementation of NUCs' policies in Egypt. These factors include weak national coordination, limited local organizational capacity and an outdated legal framework. Shawkat (2015) showed that NUCs' policies have been in place for almost four decades but have remained stagnant, leading to the unaffordability of land, which now serves a social function more than an economic one.

Ahmad (2015) examined Borg al-Arab City as a case study and discovered that it achieved urban area organization, activities and population growth but faced delays due to exaggerated growth expectations. Likewise, Shawkat and Hendawy (2016) analyzed

data from 1954 to 2015 to evaluate the effectiveness of mega projects in Egypt. They found the valley is overcrowded and inadequately planned, with unrealistic population growth targets and regional planning hindering integrated implementation.

Kenawy (2017) found that the success of NUCs depends on integrating regional, economic, environmental and social studies into project planning. Additionally, employment plans and targets should be included, ensuring that any family of four has at least two jobs. Furthermore, Salem and Monir (2017) suggested that NUC development involves growth and social, cultural and economic changes, which demand quality and quantity.

Also, AbouKorin (2018) examined the spatial distribution and field of influence of Nile Valley cities in Egypt from 1947 to 2006, revealing rapid socioeconomic changes. He suggested launching services and economic activities in small cities to reduce emigration and attract more residents. Moreover, he emphasized that revising cities' structural plans should consider urban and rural populations' needs for economic activities and services. Badawy and Pinto (2018) compared the New Capital in Egypt and Brasilia to prevent segregation and suggested learning from Brasilia. They recommended providing affordable housing and job opportunities to avoid relocating middle and lower-income families to peripheral satellite cities.

Moreover, El Bardisy et al. (2019) revealed that social interaction in new urban communities could be stimulated by implementing socio-spatial strategies designed specifically for the Greater Cairo Region. Yoseph (2020) recommended revising Egyptian building legislation and NUCA urban rules, incorporating parametric spatial and environmental assessment simulation tools. Additionally, Hegazy (2021) revealed that modifications, especially in the value systems and fundamental urban development processes, are needed to enhance Livability in NUCs. Furthermore, Ghalib et al. (2021) found that incorporating national and international funding bodies is crucial in developing NUCs to reduce budget pressure and attract global investors. Elkhashab (2022) presented a comprehensive analysis of the factors influencing the Livability of new urban developments in Egypt.

In short, although prior work presents various conclusions regarding the factors that affect the NUCs' effectiveness in redistributing the population in Egypt, the average total occupancy rate of the NUCs is still around 31%. Thus, more studies are needed as much of the evidence in the literature is based on case studies and the analysis of historical data, with little emphasis on the opinions of direct stakeholders. Thus, this study seeks to address this gap in the literature by presenting empirical evidence from Egypt using a sample of NUCs' residents and non-residents. Accordingly, the current study offers a plausible answer to the research question: How do residents and non-residents gauge the NUCs' ability to redistribute the population effectively? Offering a participatory dimension to the literature using quantitative evidence from residents and non-residents fills the strategic gap in developing new cities, as different parties usually have distinctive preferences.

3. Materials and Methods

3.1. Variable Measurements

Three variables measured the NUCs' ability to redistribute Egypt's population: Livability, independence of economic development and attraction and satisfaction with the NUCs.

Although there is no agreement on the definition of Livability because it differs across places, cultures, systems, economies, values and ages, there is a consensus on its significant role in improving a city's quality of life and hence, residential satisfaction (Shamsuddin *et al.*, 2012; Chiu, 2019; Türkoğlu *et al.*, 2019; Kotby *et al.*, 2021; Sanni-Anibire, 2022; Güngör & Terzi, 2024).

Livability is extensively linked to and used interchangeably with sustainability, quality of life and healthy communities (Woolcock, 2009; Nasreldin *et al.*, 2017). Prior studies argued that the stakeholders in the area often specify Livability as "fit to live in" or the factors that contribute to the quality of life in a community (van Dorst, 2011; Treija *et al.*, 2020; Skrydstrup *et al.*, 2022). Thus, in this study, Livability refers to the availability of facilities and necessities that determine the NUC's quality of life.

Livability, in this research, is measured by eight common indicators: Adequate maintenance operations (Beck, 2009; Omazić & Slavuj Borčić, 2019; Kumar-Nair & Landman, 2023), sufficient green and recreational spaces (Meisel and Thiele, 2014; Iman, 2021; Haase *et al.*, 2022), social and family relations (Myers, 1988; Tartaglia, 2013; Macke *et al.*, 2018; Zulaica & Oriolani, 2019), affordable cost of living (Ülengin *et al.*, 2001; Mccrea *et al.*, 2005; Serag El Din *et al.*, 2013; Salem, 2023), affordable house prices (Gkartzios & Scott, 2010; McDonald, 2012), better living place (Ng, 2005; Mao *et al.*, 2022), appropriate public transportation (Feng & Hsieh, 2009; Narayanaswami, 2017; Ahmed & Abd El Monem, 2020) and sufficient security and safety (Omazić & Slavuj Borčić, 2019; Candia *et al.*, 2019; Kourtiti *et al.*, 2020; Aly *et al.*, 2023).

Moreover, any successful new urban community requires a strong, independent economic base to thrive and attract many people by understanding their needs and problems (Sims, 2014). The independence of economic development of the NUCs refers to their ability to act and develop autonomously without relying on other nearby major cities. Employment opportunities, goods and services should be readily available to encourage city residents to meet their daily needs within city borders (Kenawy, 2017; Salam & Monir, 2017).

Thus, to stimulate mobility to the NUCs and redistribute the population, urban planning and strategies must prioritize healthcare services (Hensley *et al.*, 2020; Wang *et al.*, 2023), promote higher education opportunities (Bernt, 2019; Paweenawat & Liao, 2023), afford low-income housing (Zheng *et al.*, 2020; Adedeji, 2023), offer job opportunities through economic expansion (Shin, 2012; Shaalan *et al.*, 2016) and foster innovative local economic activities to meet residents' needs (He *et al.*, 2020; Hussien *et al.*, 2023).

Hence, the five common indicators in the literature presented above express the ability of the NUCs to create independent economic development: the adequacy of healthcare services, the sufficiency of educational services, the availability of housing units, the sufficiency of job opportunities, the availability of essential needs and wants and the availability of investment opportunities.

Furthermore, attraction and satisfaction refer to the willingness to move or stay within NUCs. Higher attraction and satisfaction occur when residents prefer NUCs (Mapes *et al.*, 2017; Beer *et al.*, 2022), improvements meet or exceed expectations (Cao *et al.*, 2020; Zhou *et al.*, 2023), city occupation rates rise (Wang *et al.*, 2021; Ren *et al.*, 2023), overcrowding is alleviated (Stewart, 1996; Nasreen & Ruming, 2019) and non-residents are willing to move (Alghais & Pullar, 2018). Thus, the attraction and satisfaction of NUCs are evaluated by getting feedback and opinions from residents and non-residents. Specifically, attraction and satisfaction are considered through residents'

retention, expectation conformity, the ability of NUCs to mitigate major cities' overcrowding and readiness to move to NUCs.

Finally, to explore how the residents and non-residents consider the relevant factors contributing to developing or improving residence in NUCs and thus have distinctive priorities and preferences that may affect their satisfaction, they were asked to assess the relevancy of eight suggested factors that enhance residence in NUCs. (1) Ease of movement and communication from and within the new urban communities; (2) improving Infrastructure; (3) introducing more green spaces and recreational places; (4) making new urban communities cleaner and safer; (5) participation of the new urban community residents in decision-making that will affect them; (6) providing more job opportunities; (7) providing various services in the new urban communities, such as healthcare and educational services; (8) reducing housing unit prices.

Table 1. Research Variables and Indicators. Source: Developed by authors

Variable	Indicators
1- Livability	Adequate maintenance operations. Sufficient green and recreational spaces. Social and family relations continuity. Lower cost of living. Affordable house prices. Better living place. Appropriate public transportation. Sufficient security and safety.
2- Independent Economic Development	Adequate healthcare services. Sufficient educational services. Available housing units. Sufficient job opportunities. Available needs and wants.
3- Attraction and Satisfaction	Residents' retention. Expectations conformity. Occupancy rate. Mitigating major cities' overcrowding. Readiness to move to NUCs.

3.2. Questionnaire Design and Sampling

A questionnaire was designed to measure the opinions of the NUCs' residents and non-residents regarding the research variables in the Egyptian context. The respondents were asked to assess the variables related to the NUCs by giving their agreement using a Likert-type scale on a six-point scale (where 1 = Strongly Disagree; 6 = Strongly Agree). A Likert-six-point scale inspires participants to consider the question more precisely and decide positively or negatively. The six-point scale helps account for assessments that are rarely neutral. Furthermore, an even number of items in the response scale can yield easier groupings to understand and discuss.

The researchers employed the translation-back translation technique to guarantee participants' comprehension of each question and maintain the original objectives of the questionnaire. The researchers initially translated the initial questionnaire into Arabic. Subsequently, a proficient individual in both languages conducted a back-translation of the questionnaire without prior exposure to the English versions. Following minor modifications, the back-translations showed a high degree of similarity to the original

questionnaire, thus leading to the development of the final Arabic version.

The questionnaire's final English and Arabic versions were distributed in September 2022, targeting the first three generations of NUCs. Cities of the fourth generation of NUCs were excluded from the study as they are still being developed and built. The questionnaire started with an opening statement emphasizing that all data gathered is retained anonymously and will be used only for academic research and that no personal information is required. The Microsoft form was used to generate the questionnaire, which was distributed online, ensuring no participant information was known to the researchers during questionnaire administration.

Since the NUCs are distributed over a large geographical area and it is not easy to reach all the cities of the three generations, the social networking groups of each of the NUCs were targeted to get the answers of their residents. On the other hand, the questionnaire was sent to groups for each Egyptian governorate to obtain answers from non-residents of the NUCs.

By the end of September 2022, the researchers had received 640 responses. After checking the responses, seven were discarded, as five needed to be completed or correctly answered and two were speedy respondents. Thus, 633 usable responses were used for the analysis in this study, which satisfies the minimum sample size of 385 at a confidence level of 95%. The variance of all answers for each respondent showed no zero value, as the minimum value was 2.19, showing no sign of a straight-liner problem in the dataset (i.e., the same answer for all questions from the same respondent).

The samples of residents and non-residents are comparable as the Chi-square test (χ^2) was not significant ($p > 0.05$) for demographical variables (for example, gender, age, work status and family members). Furthermore, the one-way Analysis of Variance (ANOVA) test did not show significant differences between the respondents' answers across different demographic variables such as income level, housing type and living period for the residents' sample and the number of family members and working status for the non-residents' sample (F-test was not significant in any case, as $p > 0.05$). Therefore, it can be concluded that the sample represents the study population. In addition, the reliability and validity of the questionnaire were confirmed as Cronbach's $\alpha > 0.70$ for any scale (i.e., Livability, independent economic development and attraction and satisfaction) and Pearson correlation coefficients between each scale and its items are significant ($p < 0.01$).

3.3. Descriptive Statistics

The sample descriptive statistics are presented in Tables 2 and 3. According to Table 2, 40.1% of the respondents live in NUCs, while 59.9% live outside the NUCs. The gender of the respondents was around 52% male and 48% female. Moreover, 53.4% of the respondents are aged 46-65 and the second largest group was 36-45 (24.6%). Both groups accounted for nearly 78% of the respondents. Moreover, most of the respondents (79.8%) are employees. Regarding the number of family members, 34.1% of the respondents have four members and 23.5% have five. Thus, around 57.6% of the respondents have 4 to 5 family members, consistent with the average household size in Egypt.

Table 3 presents descriptive statistics for those respondents who live in one of the NUCs in Egypt. Respondents from 15 NUCs in Egypt answered the questionnaire. Around 75.5% of the respondents live in five NUCs close to the Greater Cairo Governorates: Cairo, Giza and Qalyubia, which have 27% of the population in Egypt.

Moreover, respondents who live in NUCs belong to the first generation (39.4%), second generation (19.7%) and third generation (40.9%). In addition, 37.4% of the residents' sample work in NUCs, while 62.6% work outside. Furthermore, 52.7% of the respondents reported having a monthly income of less than LE 10,000. Most of the sample (87.8%) live in their own houses.

Table 2. Descriptive Statistics of Residents and Non-residents Sample. Source: Developed by authors

Residents and Non-residents Sample	N	Percent
Residential of NUCs		
Residents	254	40.1%
Non-residents	379	59.9%
Gender		
Male	328	51.8%
Female	305	48.2%
Age		
<18	1	0.2%
18-35	123	19.5%
36-45	156	24.6%
46-65	338	53.4%
>66	15	2.4%
Working Status		
Not-working	36	5.7%
Employee	505	79.8%
Employer	35	5.5%
Student	28	4.4%
Free Lancer	29	4.6%
Family Members		
<4	188	29.7%
4	216	34.2%
5	149	23.5%
6	52	8.2%
>6	28	4.4%

Table 3. Descriptive Statistics of Residents' Sample

Residents of NUCs Sample	N	Percent
NUCs of the Respondents		
10 th of RAMADAN	18	7.1%
15 th of MAY	4	1.6%
MADINAT AL SADAT	1	0.4%
6 th of OCTOBER	26	10.2%
New BORG AL ARAB	1	0.4%
New DAMIETTA	12	4.7%
BADR	14	5.5%
EI OBOUR	24	9.4%
New MINYA	2	0.8%
EI SHEIKH ZAYED	21	8.3%
EL SHOROUK	27	10.6%
New CAIRO	94	37%
New SOHAG	7	2.8%
New QUINA	2	0.8%
New TIBA	1	0.4%
NUCs Generations		
1 st Generation	100	39.4%
2 nd Generation	50	19.7%

3 rd Generation	104	40.9%
Working in NUCs		
Working in NUCs	95	37.4%
Not working in NUCs	159	62.6%
Income Level (EG Pound)		
< 6,000	79	31%
6,000 < 10,000	55	21.7%
10,000 < 15,000	33	13%
15,000 < 20,000	23	9.1%
20,000 < 30,000	21	8.3%
> 30,000	43	16.9%
Housing Type		
Rented	31	12.2%
Private (Owned)	223	87.8%

Source: Developed by authors

4. Results

4.1. NUCs' Livability

Table 4 introduces an assessment of the Livability from the perspective of the NUCs' residents using eight indicators. Residents recognized that the Livability of NUCs is relatively low, as the total average score of this variable was 3.77. In addition, they consider the cost of living high, the prices of houses less affordable and maintenance and public transportation need improvement.

Table 4. Residents' Assessments for NUCs' Livability. Source: Developed by authors

Indicators	Average Score
Lower cost of living	2.51
Affordable houses prices	3.05
Adequate maintenance operations	3.83
Appropriate public transportation	3.84
Social and family relations continuity	3.98
Sufficient security and safety	4.06
Sufficient green and recreational spaces	4.23
Better living place	4.66
Total Average Score (n=254)	3.77

Table 5 presents the responses of non-residents of the NUCs regarding Livability. The responses of the non-residents' sample are consistent with the findings of the residents' sample and confirm that the Livability of NUCs is low, as the average score was 3.64. The non-resident sample expresses that house prices are not affordable, public transportation needs to be more appropriate and security and safety need to be improved.

The results presented in Tables 4 and 5 reveal that even though both groups evaluated the Livability of the NUCs as low, the non-resident sample rated it less than the sample of residents. The t-test was utilized to decide if there were statistically significant differences between the Livability indicators of the two samples. The results show no differences between the two groups regarding the evaluation of housing affordability and sufficiency of safety and security, as the t-test results are insignificant ($t=1.86$ and $t=1.07$, $p>0.05$, respectively). Consequently, the results provide robust evidence that the Livability of the NUCs needs improvement.

Table 5. Non-residents' Assessments for NUCs' Livability. Source: Developed by authors

Indicators	Average Score
Affordable houses prices	2.83
Appropriate public transportation	3.42
Sufficient security and safety	3.95
Better living place	4.35
Total Average Score (n=379)	3.64

4.2. NUCs' Independent Economic Development

Table 6. Residents' Assessments for NUCs' Independent Economic Development

Indicators	Average Score
Sufficient job opportunities	3.48
Adequate healthcare services	4.08
Available needs and wants	4.26
Available housing units	4.35
Sufficient educational services	4.46
Total Average Score (n=254)	4.13

Source: Developed by authors

Table 6 presents the residents' group responses regarding the independent economic development of NUCs. The results show that NUCs are less independent economic cities, as the total average score is 4.13. Furthermore, respondents evaluated that job opportunities in NUCs must be increased.

Table 7 introduces the responses of non-residents regarding the NUCs' independent economic development. The responses indicated that NUCs are less independent regarding their economic development, with an average score of 3.65. In addition, the respondents revealed that NUCs need more job opportunities, necessities and housing units.

Table 7. Non-residents' Assessments for NUCs' Independent Economic Development

Indicators	Average Score
Sufficient job opportunities	3.49
Available needs and wants	3.67
Available housing units	3.80
Total Average Score (n=379)	3.65

Source: Developed by authors

Thus, although both residents and non-residents agree that NUCs are less economically independent, the non-residents believe that NUCs depend more on major cities like Cairo than residents think. The results also show an insignificant difference between the two groups regarding the lack of job opportunities, as the t-test result is insignificant ($t=-0.11$, $p>0.05$). Therefore, the study concludes that residents and non-residents agree that NUCs require more jobs, essential needs and housing units as they still rely on major cities.

4.3. NUCs' Attraction and Satisfaction

Table 8 presents residents' responses regarding their attraction and satisfaction with NUCs. The results show that they slightly agreed that NUCs attract and satisfy people, as the average score is 4.38.

Table 8. Residents' Assessments for NUCs' Attraction and Satisfaction

Indicators	Average Score
Mitigating major cities' overcrowding	4.06
Rising occupancy rate	4.07
Expectations conformity	4.21
Residents' Retention	4.64
Total Average Score (n=254)	4.24

Source: Developed by authors

Moreover, Table 9 presents the responses of non-residents regarding the attraction of NUCs. They indicate that NUCs are less attractive cities, as the average score was 4.12 and barely mitigate the overcrowding in the major cities in Egypt. As such, their readiness to move to NUCs is moderate, with an average response score of 4.47.

Table 9. Non-residents' Assessment for NUCs' Attraction and Satisfaction

Indicators	Average Score
Mitigating major cities' overcrowding	3.95
Readiness to move to NUCs.	4.47
Total Average Score (n=379)	4.12

Source: Developed by authors

Furthermore, the samples of residents and non-residents agreed that the NUCs are ineffective in mitigating the major cities' overcrowding problem in Egypt, as the t-test is insignificant ($t=1.07$, $p>0.05$). This finding signifies that the NUCs are less effective in solving the overcrowding population in major cities, which implies that the NUCs cannot effectively attract and satisfy residents.

More analysis was done to explore how the residents and non-residents consider the relevant factors contributing to developing residence in NUCs and results are reported in Table 10 and Figure 1. The results show that residents and non-residents weigh the eight factors differently. The t-test was used to examine differences between the ranks of the two groups. The t-test is significant in all aspects except for improving infrastructure and providing diverse services in the NUCs, such as healthcare and educational services. Both samples strongly agreed that reducing housing prices has the highest priority in improving NUCs' ability to redistribute the population in Egypt.

Table 10. Rank of Factors that Improve Residence in NUCs

Factors	Residents	Non-Residents	T-test
Reducing housing unit prices	5.92	7.06	-7.11**
Making new urban communities cleaner and safer	5.92	5.28	4.20**
Improving Infrastructure	5.60	5.52	0.54
Providing numerous services in the new urban communities, such as healthcare and educational services	4.06	4.29	-1.60
Providing more job opportunities	4.06	4.78	-4.39**
Participation of the new urban community residents in decision-making will affect them	3.85	2.96	6.02**
Introducing more green spaces and recreational places	3.40	2.55	5.28**
Ease of movement and communication from and within the new urban communities	3.20	3.55	2.03*

Source: Developed by authors

**p<0.001; *p<0.05

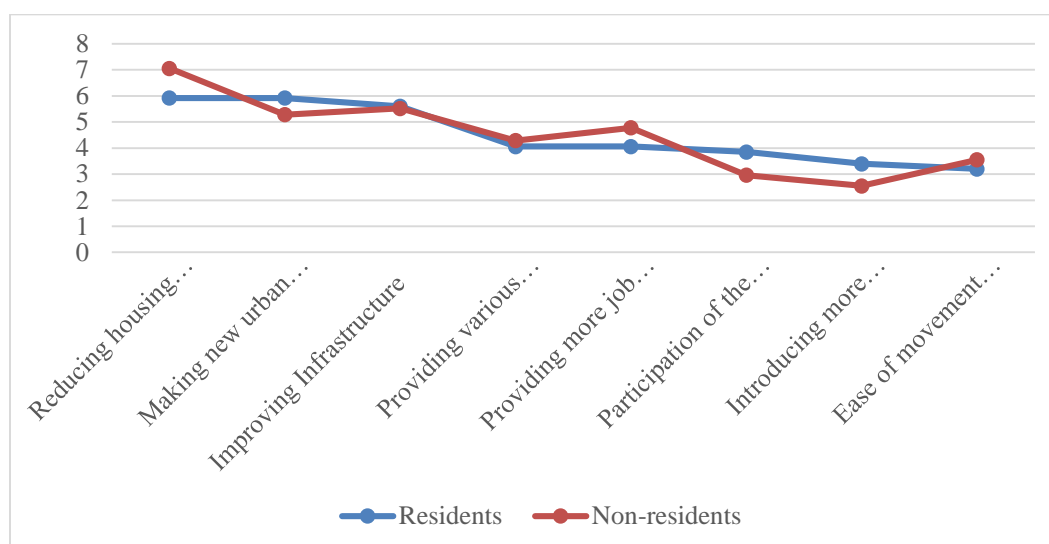


Figure1. Ranking of Factors that Improve Residence in NUCs

Source: Developed by authors

5. Discussion

Over the past 40 years, Egypt's population has grown by 154%, reaching 105 million in 2023. The New Urban Communities Authority (NUCA) developed 44 NUCs through four generations to redistribute the population. However, many NUCs have yet to reach their initial targets, with an average occupancy rate of 31%. Thus, prior studies have questioned the effectiveness of NUCs in redistributing the population and proposed different conclusions and recommendations depending on findings from case studies and historical data analysis, with little emphasis on the opinions of direct stakeholders. Hence, this study sought to fill this gap by presenting evidence from the point of view of the residents and non-residents of the NUCs to answer the research question: How do residents and non-residents gauge the NUCs' ability to redistribute the population effectively?

A questionnaire was employed to assess the NUCs' Livability, independent

economic development and attraction and satisfaction using a sample of 633 responses from residents and non-residents of the NUCs. The results showed robust evidence that the Livability of the NUCs needs improvement. Residents and non-residents agreed on the need to lower the cost of living, make the prices of houses more affordable and improve maintenance and public transportation. In addition, the findings demonstrated that residents and non-residents believe that the NUCs need to create more job opportunities, offer necessities and provide more housing units as they still depend on major cities. Additionally, while residents slightly agreed that the NUCs attract and satisfy people, the non-residents rated the attraction and satisfaction of NUCs less. However, both samples indicated that NUCs are ineffective in mitigating the population overcrowding in major cities in Egypt. When more analysis was done to explore how the residents and non-residents consider the relevant factors contributing to developing residence in NUCs, the results showed that although they weigh development factors differently, they strongly agreed on the priority of reducing housing prices in improving NUCs' ability to redistribute the population in Egypt.

The findings of this research support the results of prior studies that concluded that NUCs must become more attractive to absorb more of the population from major cities such as Cairo and Alexandria (Sims, 2014) and need to be more self-contained and independent (Ahmad & Dmitrieva, 2014), as their policies have deviated from their original foundations (Shawkat & Hendawy, 2016). Additionally, the results are consistent with the prevailing argument in the literature that housing prices in NUCs are out of the reach of most citizens and that the NUCs' Livability needs significant improvements (Abdel Raheem *et al.*, 2020; Shawkat, 2020).

The study's findings have implications for developing NUCs in Egypt, indicating that NUCAs must prioritize the quality of urban life in their design. The improper definition of low- and middle-income groups adopted by the NUCA must be revised. The study recommends reviewing income differences and income classification categories in the internal real estate regulations and commissions to provide affordable housing for lower and middle-class families. The economic independence of NUCs must be reinvestigated, as most are established as satellite or twin cities rather than independent entities. Prioritizing economic bases and improving essential services is crucial for enhancing the NUCs' Livability. Thus, central policies that stimulate economic growth and build new houses must be revisited in the Egyptian context. Public authorities, particularly the NUCA, should reassess the accuracy of published statistics and the realistic target population of NUCs.

Although the findings of this study have provided insight into the residents' and non-residents' priorities in NUCs and how to form countermeasures to solve these issues, it has some limitations that future research could consider. As the current sample covers only data from the first three generations of the NUCs, future research is invited to replicate this study using a large sample that could include cities from fourth-generation cities. Given that there is no consensus in the literature regarding the dimensions of the selected variables, such as Livability, the results of this study need to be understood considering the various aspects of the variables. Thus, future studies may explore more dimensions and factors to validate this study's findings. Additionally, while this research focuses on the opinions of the NUCs' residents and non-residents, researchers in the future may extend the results of this study by investigating the options and feedback of other stakeholders, such as experts and investors in NUCs. Furthermore, this study analyzed data gathered from the Egyptian context using a survey method. Accordingly,

studies in the future could combine questionnaires and case study analyses or apply comparative studies to clarify further the attraction and feasibility of NUCs.

6. Conclusion

Various recommendations have been presented in the literature to improve the role of the NUCs in redistributing the population in Egypt, with little evidence of the thoughts of the NUCs' residents and non-residents. This study sought to fill this gap by answering the research question: How do residents and non-residents gauge the NUCs' ability to redistribute the population effectively? The study analyzed 633 residents and non-residents' responses and documented robust evidence that NUCs need more improvement in Livability, independent economic development and attraction and satisfaction.

The results demonstrated that residents and non-residents agreed that NUCs need to improve their Livability by exerting more effort to lower living costs, make house prices more affordable and improve maintenance and public transportation. Moreover, the findings showed that NUCs are less economically independent as they still rely on nearby major cities. In particular, NUCs need to enhance their economic independence by expanding their economic base by creating more job opportunities, offering varied necessities and wants and affording more housing units. Additionally, the results showed that NUCs attract and satisfy people moderately, but they are less effective in alleviating overcrowding in major Egyptian cities. Supplementary analysis revealed that residents and non-residents strongly agree that reducing housing prices is a priority for improving NUCs' population redistribution in Egypt. These findings align with previous research indicating that NUCs must become more appealing, self-sufficient and economically autonomous to accommodate a larger portion of the population from major Egyptian cities. The findings also support the argument that housing prices in NUCs are less affordable, highlighting the need for improvements in Livability.

Accordingly, policy recommendations for urban development and population redistribution in Egypt should prioritize citizens' needs rather than a top-down approach. Hence, the planning process should be based on analyzing the internal and external environments' strengths, weaknesses, opportunities and threats (SWOT). In this context, getting stakeholders' feedback is crucial for improving the development of NUCs. A proposed mechanism is a citizens' participation initiative, where each NUC has a council of representatives to gather opinions and communicate them to developers and NUCA. Two surveys can be conducted to gauge citizens' perspectives on cities, contributing to satisfaction and involvement in developing NUCs. The collected data can be divided into structured (mutual) and unstructured (exclusive) areas of development. This allows for a comprehensive strategy to ensure that NUCs' redevelopment follows an integrative structure, ensuring a more integrated approach to urban development.

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