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Estimating Housing Requirements Using Demographic and Affordability Models in Ahmedabad District, Gujarat (2022–2027)

[1] Pankajkumar D. Parmar, [2] Dr. Sanjay Patel
[1] Research Scholar & Assistant Professor, M.G. Science Institute, Ahmedabad, India
[2] Assistant Professor & Head, Department of Statistics, Udhana Citizen Commerce College, Surat, India
Email - [1]parmar.pan0303@gmail.com , [2] sdpatelh@gmail.com,

Abstract: *Apart from that, rapid urbanization and sustained economic growth have transformed Ahmedabad District into one of Gujarat's most densely populated and industrially dynamic regions. This paper develops an integrated framework to predict population growth and estimate urban housing needs for 2022–2027. Using data from the Census (1951–2011), NFHS-5, AMC records, MoHUA reports, and other secondary sources, the study models population growth through curve estimation (quadratic, growth, exponential) and time-series analysis (ARIMA (1,2,0)). The quadratic model with an R^2 of 0.985 emerges as the most suitable district-level projection model, supported by ARIMA for short-term trends. These projections then form the basis for estimating housing requirements without altering existing structural attributes. Four complementary approaches are applied: (i) Household-Based Projection Method, (ii) Component-Based Method (UN-Habitat's age-specific headship rates), (iii) Housing Stock–Incremental Deficit Method used in MoHUA's TG-12 and TG-18 reports, and (iv) Affordability–Income Distribution Method based on income groups (EWS, LIG, MIG, HIG) and a 30% affordability threshold. Results show that annual housing needs range from 22,000 to 30,000 units under the affordability-effective demand approach which rise to 2.3–2.6 lakh units when using the housing stock–incremental deficit method, which incorporates congestion, slums, dilapidation, and homelessness. The comparative assessment indicates that demographic growth is only one driver of new housing demand, while structural deficits and affordability constraints critically shape the actual magnitude and composition of housing needs. In Ahmedabad, EWS and LIG households account for most incremental demand, underscoring the need for pro-poor, subsidy-supported, and spatially focused housing interventions. The study concludes that an integrated framework combining demographic projections, stock assessment, and affordability criteria is more effective for guiding future urban housing strategies in rapidly expanding Indian cities*

Key Words: *Ahmedabad; population projection; urban housing need; ARIMA; affordability; EWS/LIG; UN-Habitat; MoHUA.*

1. INTRODUCTION:

Ahmedabad District, which is situated in the heart of Gujarat, is ranked as one of the top populous and economically lively areas out of the western India region. With a population of over 5.5 million as per the Census of 2011, the district headquarters, Ahmedabad city, is the biggest urban centre in Gujarat and was placed as the fifth most populous city in India by the 2011 Census. The district is made up of ten talukas, i.e. Barwala, Daskroi, Dholka, Dhandhuka, Detroj, Sanand, Bavla, Ranpur, Mandal and Viramgam, and is known for its high level of urbanization, industrial concentration and in-migration.

Once termed the "Manchester of India" by virtue of the textile base, Ahmedabad city has been the diversification into various areas like chemicals and dyes, pharmaceuticals, agro and food processing, engineering, automobiles, and electronics. Besides, the city also became a biotech and IT hub. The city is home to major industrial groups such as the Adani Group, Reliance Industries, Nirma Group, Arvind Mills, Cadila Pharmaceuticals and Claris Lifesciences. The presence of R &D institutions like the Ahmedabad Textile Industry's Research Association (ATIRA) has been a major factor that has strengthened its competitive position in manufacturing and service sectors allied with it. Among the many long-term planning initiatives executed by the Gujarat government, the Ahmedabad–Gandhinagar corridor has become a core educational and infrastructural network with luxurious projects such as the Indian Institute of Management Ahmedabad (IIMA), Gujarat University and Gujarat International Finance Tec-City (GIFT City). This corridor is

evolving into a knowledge- and service-driven economic hub, attracting skilled labour and high-value investments thereby.

District covers geographically between 71.6 ° and 72.9° East longitude and 20.0° and 23.4° North latitude approximately 8,086.81 square kilometers in extent. The climate is generally semiarid, and the temperature varies from about 9°C in the winter to about 45°C during the hot season, the average annual rainfall is about 1,017 mm. Some of the significant rivers flowing through the district are the Sabarmati, Khari, Meshwo, Bhogavo, Omkar, Bhadar, Nalika and Uttavali. Population-wise, Ahmedabad is counted among the most densely populated districts in Gujarat. In the 2011 Census, the district recorded a population of approximately 7.2 million and a population density of 890 persons per square kilometer, which was second only to the city of Surat. Between the years 2001 and 2011, the sex ratio improved from 882 to 904 females per 1,000 males and the literacy rate elevated to 85.3 percent which is more than the state average and thus depicts great improvement in the human development of the district. In the decade, it was one of the seven districts in Gujarat where the population growth rate was higher than the state average, registering a growth of 22.42 percent between 2001 and 2011, which was mainly due to the migrants coming into its urban centers from both within the state and from other states. The housing situation in the urban areas has become a challenge due to increased demand for urban housing caused by the industrial dynamism, migration, and the sustained infrastructure investment. The data from the Ministry of Housing and Urban Affairs (MoHUA) and NFHS-5 depict that Ahmedabad is still rapidly urbanizing and the housing shortages, slum concentrations and qualitative inadequacies of the current stock are still there in the city and its adjoining areas. Particularly, talukas like Ahmedabad city, Sanand, Daskroi and Dholka have seen a rapid urban growth during the recent past which suggests an increase in housing demand in the region in the coming years. In such circumstances, the current paper is centered on projecting the population of Ahmedabad District for the years 2022–2027 and estimating the corresponding urban housing needs by employing four distinct but complementary analytical methods. The purpose is to facilitate urban planning and housing policy by means of a data-driven framework, with a special emphasis on affordability and the conditions of lower-income groups.

2. LITERATURE REVIEW:

- The National Housing Bank, New Delhi, and NIBM (December 2014) 'A Study of Residential Housing Demand in India': This research explores the housing sector's present and future in India through extensive empirical research and detailed analysis at both micro and macro levels. In their macro-analysis, it is mentioned that 68 million independent houses will be needed due to the age demographic effect in 2015. They further discuss the potential relationship between average housing demand per household and GDP growth. On a micro level, the study considers location, gender, age, income, and house size as variables to identify or forecast housing needs or demands.
- Neptis undertook a study of the Toronto metropolitan region in January 2006 titled "Economic Factors that Influence Population Growth and Housing Demand in the Greater Golden Horseshoe Region." This study modeled the population growth from 2001 to 2031 and made predictions for each of the ten census divisions in the Greater Golden Horseshoe area. To establish housing requirements, the study estimated household headship rates by age group in 2001 and then calculated the projected population using age-specific headship rates. The study predicted the number of households by age group for 2001, 2011, 2021, and 2031 as well as total household numbers for the years 2001, 2011, 2021, and 2031 by summing up these age groups. They calculated the increase in the number of households for each period to represent the demand for new housing and then separated this demand into various types of accommodation. Based on that analysis, the average annual requirement of new homes between 2001 and 2011 was about 54800 units, and between 2011 and 2021, it was roughly 46700 units. The yearly housing demand from 2021 to 2031 is close to 32400 units, which is 41% less than the previous decade. In addition, the research report concluded that the wood content in the new housing would be approximately 15% less compared to the last decade.
- In January 2002, Dowell Myers, John Pitkin, and Julie Park initiated a research project entitled "A Study on the Estimation of Housing Need Amid Population Growth and Change." The study aimed at devising a more precise framework and methodology for calculating housing requirements in California. They scrutinized three different scenarios of estimating housing needs: the constant scenario, the cohort scenario, and the mixed scenario. The constant scenario implies that future housing will be like that of a particular demographic group, such as age, immigrant status, native birth, and other factors. The cohort method is about creating a model that mirrors specific years of changes in headship and homeownership rate for a cohort. The mixed scenario combines the elements of the constant and cohort scenarios. Their final research showed that the mixed scenario is the best strategy for housing needs estimation in California because it closely corresponds to the actual increase in total occupied dwellings after the projection of housing requirements.

3. DATA SOURCE:

This study is mostly based on secondary data that have been gathered from various authoritative sources. Data related to population and long-term urbanization for Gujarat and Ahmedabad (1951-2011) were extracted from the Census of India. Information regarding household size, sex ratio and headship patterns were taken from NFHS-5 (2019-21). Data about housing stock, slums and backlog estimates were the Ahmedabad Municipal Corporation records and the Gujarat Housing Board. Urban housing shortage assessment methods were taken from the different Technical Group reports (TG-12 and TG-18) of MoHUA. The material for the income distribution and labour market characteristics was NSSO and PLFS datasets. These sources have been instrumental in providing a comprehensive and reliable base for the analysis and forecasting.

4. RESEARCH METHOD / METHODOLOGY:

4.1 Population Projection Models:

Two broad modelling strategies are employed to project the population of Ahmedabad District for 2022–2027:

(A) Curve Estimation Models:

Using Census benchmarks from 1901 to 2011, several functional forms were fitted to the district population series using SPSS curve estimation, including linear, logarithmic, exponential, growth curve and quadratic models. Model performance was evaluated using R (correlation coefficient), R^2 (coefficient of determination), standard error and F-statistics with corresponding p-values. Among the estimated models, the quadratic specification emerged as the best-fitting form with $R^2 = 0.985$ and statistically significant parameters, capturing the non-linear pattern of population growth.

(B) Time-Series Model: ARIMA:

Complementing the curve estimation approach, an autoregressive integrated moving average model, ARIMA (1,2,0), was estimated using SPSS to capture short-term dynamics in the population series. Stationarity was examined through differencing (two-lag differences) and confirmed via the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test. Autocorrelation and partial autocorrelation functions (ACF, PACF) were used to identify an appropriate ARIMA structure. The selected ARIMA (1,2,0) model exhibited a high R^2 of 0.992, stationary R^2 of 0.862 and acceptable Ljung–Box Q statistics, indicating an adequate fit with no significant residual autocorrelation. The quadratic model was used as the principal tool for medium-term (2022–2027) projections, given its excellent fit and interpretability, whereas ARIMA projections served as a sensitivity check, particularly for assessing the impact of recent trends on short-term growth.

4.2 Housing Need Estimation Methods:

Four complementary methods were applied to derive housing need estimates for Ahmedabad for 2022–2027:

(I) Household-Based Projection Method:

This widely used approach converts projected population into households using an assumed average household size and then adjusts for replacement and vacancy. The core formula is:

$$H_t = \frac{P_t}{HS}$$

where H_t is the projected number of households, P_t is the projected population in year t and HS is average household size.

New housing need is obtained as the increment in households $(H_t - H_{t-1})$, to which replacement demand (assumed at 0.5 percent of existing stock) and an obsolescence rate (0.2 percent) are added. A vacancy margin of 5 percent accommodates market flexibility. Base year (2021) population, average household size (4.5 persons) and housing stock (18 lakh units) were derived from Census 2011, NFHS-5 and AMC/GHB sources.

(II) Component-Based Method (UN-Habitat Framework)

The component-based approach disaggregates projected population into age cohorts (0–14, 15–24, 25–34, 35–44, 45–59, 60+) using Census 2011 urban age shares. Each age group is then separated by sex using an assumed urban sex ratio of 900 females per 1,000 males. Gender-specific headship rates from NFHS-5 are applied to each age–sex group to obtain age-specific household formation:

$$HH_{age,t} = M_{age,t} \times h_m + F_{age,t} \times h_f$$

Total households are then aggregated across age groups. Replacement (0.7 percent of existing households), vacancy (5 percent) and an annual backlog component of 10,000 units are added to compute annual housing need.

(III) Housing Stock–Incremental Deficit Method (MoHUA):

Following MoHUA's Technical Group methodology, this method estimates housing need as the sum of backlog, new households, congestion relief, replacement of non-serviceable katcha and dilapidated houses, and provision for homeless households:

$$\text{Housing Need}_t = \text{Backlog} + \Delta HH_t + C_t + R_t + H_t$$

Structural components include:
(i) non-serviceable katcha houses,
(ii) obsolescent or dilapidated stock,
(iii) overcrowded households,
(iv) homeless households, and
(v) backlog housing shortage.

Existing stock (18 lakh units in 2021), a replacement rate of 0.7 percent (rising marginally over time), and a congestion backlog of 1.2 lakh units increasing by 1.5 percent annually are assumed based on AMC and national guidance.

(IV) Affordability–Income Distribution Method:

This method links new household formation to income-based affordability segments: Economically Weaker Section (EWS), Low Income Group (LIG), Middle Income Group (MIG) and High-Income Group (HIG). Income shares are derived from NSSO and PLFS-like distributions: 32 percent EWS, 28 percent LIG, 25 percent MIG and 15 percent HIG.

A housing unit is considered affordable if annual housing expenditure does not exceed 30 percent of annual income:

$$\frac{\text{Annual Housing Expenditure}}{\text{Annual Household Income}} \leq 0.30$$

New households are allocated across income classes and a fixed slum/informal housing backlog of 10,000 units per year is added to EWS demand. This approach captures effective demand rather than the total physical shortage.

5. RESULTS:

5.1 Population Projection for Ahmedabad District (2022–2027):

Curve estimation with historical Census data shows that a quadratic model is the best fit to the population trajectory of Ahmedabad District with an R^2 value of 0.999 and all coefficients statistically significant. Growth and exponential models also work well ($R^2 = 0.982$), but they represent simpler growth assumptions and have slightly lower explanatory power. Therefore, the quadratic model is used as the baseline for the projections.

Based on the quadratic specification, the projected population of the district (in thousands) is around 8,569.74 in 2022, 8,717.66 in 2023, 8,866.95 in 2024, 9,017.62 in 2025, 9,169.65 in 2026 and 9,323.05 in 2027. The same series is used to fit an ARIMA (1,2,0) model, which gives higher projections (starting from around 9,211 thousand in 2022 and going up to about 13,856 thousand by 2027), thus reflecting a stronger continuation of the recent growth trend. The ARIMA model is also statistically well performed ($R^2 = 0.992$), but its steep trajectory could be considered as a risk of overestimation in the medium term.

By taking into account both the statistical fit and demographic plausibility, the study uses the projections of the quadratic model as a starting point for estimating housing needs. The ARIMA-based results are thus mainly considered as a ceiling scenario.

3.2 Household-Based Projection Method:

Using a household size of 4.5 persons on average and accounting for replacement (0.5 percent), obsolescence (0.2 percent) and a 5 percent vacancy margin, the household-based method has arrived at total annual housing needs for Ahmedabad in lakhs of units approximately as follows: 1.41 to 1.50 during 2022–2027.

The total need is approximately 1,41,420 units in 2022 made up of about 32,870 new households, 13,330 replacement/obsolescence units and approximately 95,220 units for vacancy adjustment. The annual requirement goes up gradually, reaching its highest value of about 1,50,250 units in 2026 and then dropping to 1,41,420 units in 2027 due to a somewhat lower new household increment. This approach underscores the magnitude of freshly

built housing that is necessary not only to follow demographic growth but also to continue to have a modest number of vacant units for the efficient functioning of the market.

3.3 Component-Based Method (UN-Habitat):

Breaking down the forecast population by age and using gender-specific headship rates provide a very detailed household projection for 2022–2027. The number of total households rises from roughly 2.09 million in 2022 to close to 2.16 million in 2027. The 25–34 age group is the one that has the largest share of households, followed by 45–59 and 35–44, which means that young and middle-aged adults have made a strong contribution to the formation of new households. The number of households headed by persons aged 60 and over is also increasing consistently, thus the population is gradually ageing.

After considering replacement (0.7 percent of existing households), a 5 percent vacancy norm and a backlog of 10,000 units per year, total annual housing need is calculated to be between around 1.29 lakh and 1.48 lakh units. At some years, this is a bit lower than that derived from the household-based method, but it offers a more refined demographic basis for housing policy as it makes an explicit link between need and age structure and headship patterns.

3.4 Housing Stock–Incremental Deficit Method:

The housing stock–incremental deficit method yields substantially higher estimates of housing need because it explicitly integrates structural deficiencies in the existing housing stock. Starting from an existing stock of 18 lakh units in 2021, with a replacement requirement of 0.7 percent (rising marginally each year), a congestion backlog of 1.2 lakh units (growing at 1.5 percent annually), 1,200 units per year for homeless households and a fixed backlog of 1,00,000 units, the total annual housing requirement for Ahmedabad is estimated at about 2.34 lakh units in 2022.

This requirement rises progressively to approximately 2.59 lakh units by 2027 due to the combined effects of new household formation, ageing stock and growing congestion. The method reveals that a large share of housing need is driven not only by population growth but by the necessity to replace non-serviceable, dilapidated and overcrowded dwellings and to address homelessness and backlog shortages.

3.5 Affordability–Income Distribution Method:

Using the affordability–income framework, new households are segmented into EWS, LIG, MIG and HIG groups based on their income shares and a 30 percent housing expenditure-to-income threshold. The analysis indicates that EWS households constitute around 32 percent of all households, LIG about 28 percent, MIG about 25 percent and HIG about 15 percent. Affordability limits and indicative unit price ranges are aligned with NHB, PMAY-U and local housing cost benchmarks.

Between 2022 and 2027, overall annual effective housing demand ranges from about 22,000 to 30,000 units, after adding a yearly backlog of 10,000 units for slum and informal settlements. EWS and LIG together account for more than half of this demand in each year, demonstrating that the bulk of incremental housing need lies in the affordable and low-income segments. Demand from MIG and HIG is moderate but non-trivial, reflecting the needs of a growing middle class and high-income groups in a metropolitan economy.

The affordability–income method highlights that without targeted subsidies, credit-linked support and supply-side incentives, the effective market demand of EWS and LIG households will remain substantially below their physical housing need.

3.6 Affordability–Income Distribution Method:

Table 1 summaries the annual housing need estimated under the four methods for the period 2022–2027.

Table 1: Comparative Summary of Methods (2022–2027)

Method	Estimated Annual Housing Need (2022–2027)	Key Focus Area	Orientation
Household-Based Projection	1.41–1.50 lakh units	Population → households; replacement; vacancy	Demographic, quantity-focused

Component-Based (UN-Habitat)	1.29–1.48 lakh units	Age, sex, headship; replacement; vacancy; backlog	Demographic, structure-sensitive
Housing Stock–Incremental Deficit (MoHUA)	2.33–2.59 lakh units	Congestion, slums, dilapidation, homelessness, backlog	Structural deficit, quality-focused
Affordability–Income Distribution	22,196–30,160 units	Income segments, affordability, slum backlog	Effective demand, finance-focused

The comparison shows that the methods based on households and components produce moderate estimates of housing needs as they are mainly influenced by demographic growth and basic stock adjustments. The housing stock–incremental deficit method produces the highest requirement figures as it internalises structural inadequacies in the existing stock—katcha and dilapidated houses, congestion and homelessness—along with backlog shortages. In contrast, the affordability–income method results in lower totals as it only indicates that portion of need which can be converted into effective demand under the existing income and affordability constraints.

Combined, these methods indicate that Ahmedabad's housing problem is a multidimensional one. On the one side, fast population growth and household formation require a substantial new construction; on the other hand, accumulated structural deficits and affordability gaps, especially among EWS and LIG households, call for targeted policy interventions that go beyond the aggregate supply expansion.

6. DISCUSSION:

Results of the study affirm the necessity of using various and complementary methods when figuring out the urban housing needs in a fast-growing city like Ahmedabad. A simple demographic conversion of population into households gives a pretty good first estimation of the housing demand but if the neglect of structural deficits and issues of affordability is taken into account, the total requirement is drastically underestimated.

The household stock–incremental deficit model reveals the level of the qualitative housing crisis that has existed in the older areas of Ahmedabad like the Walled City, the former industrial chawls and dense informal settlements. Overcrowding, non-serviceable katcha houses and buildings in bad condition together make up a large share of housing needs, thereby stressing the urgency of redevelopment, in-situ upgradation and decongestion, besides greenfield expansion alone.

At the same time, the affordability–income study makes it very clear that most of the additional housing demand comes from the EWS and LIG segments. Although middle- and high-income groups are generally able to meet the costs of the market-driven housing supply, low-income households need a mixture of public subsidies, cross-subsidized projects, credit-linked support and land-use planning measures (higher FAR in affordable housing zones, inclusionary zoning, and reservation of land for EWS/LIG housing) to be able to afford housing.

From a policy standpoint, the results suggest that Ahmedabad's housing strategy should:

- Integrate population projections with regular assessments of stock quality and congestion;
- Priorities redevelopment and upgradation in high-deficit inner-city and peri-urban areas;
- Scale up affordable housing supply under schemes such as PMAY-U, with a focus on EWS and LIG;
- Align infrastructure provision (transport, water, sanitation) with emerging housing clusters in talukas like Sanand, Daskroi and Dholka;
- Strengthen local data systems to track changes in slums, informal settlements, vacancy rates and housing prices.

An integrated housing policy that simultaneously addresses quantity, quality and affordability is therefore essential to achieving inclusive and sustainable urban development in Ahmedabad.

8. CONCLUSION

The research paper presents a comprehensive framework to forecast population and urban housing needs in Ahmedabad District for 2022-2027. The study has developed a strong population projection by combining curve estimation and ARIMA modeling. As a result, the quadratic model has been chosen as the main reference because of its excellent statistical fit and a plausible growth pattern. Based on these projections, the study applied four different methods to

estimate housing needs: the household-based method, the component-based (UN-Habitat) method, the housing stock–incremental deficit method (MoHUA), and the affordability–income distribution method.

The findings indicate that housing needs per annum differ significantly depending on the method used. For example, under the affordability-effective demand framework, they amount to about 22,000-30,000 units. On the other hand, when the structural deficits and backlog are fully accounted for, the figure is estimated at over 2.3–2.6 lakh units. This variation reveals that policy makers should not rely on a single measure of housing need. A layered perspective is necessary: demographic projections for assessing new demand; stock- and deficit-based estimates for identifying qualitative shortages; and affordability-based analysis to create realistic, implementable housing programs.

As regards Ahmedabad, the central policy message can hardly be any clearer: along with rapid population growth, there are large structural deficits and affordability constraints mainly among EWS and LIG households, and these problems should be tackled at the same time. On the way to meeting the city's housing demand while promoting the wider objectives of inclusive, resilient, and sustainable urban development, a balanced mix of new construction, redevelopment, slum upgradation, and targeted affordable housing interventions will be essential.

9. LIMITATIONS:

The study primarily depends on different secondary data sources like Census reports, NFHS-5, AMC records, MoHUA technical group reports, and NSSO/PLFS datasets which may have some limitations regarding their accuracy, periodicity, and completeness. As there are no updated Census data available after 2011, the population projections for 2022-2027 are based on statistical modeling rather than fully updated ground data which might influence the precision in case of unforeseen demographic or migratory changes. The calculation of housing needs is the result of several assumptions, for instance, the average household size, replacement and vacancy rates, and income distribution shares, which can change in real conditions over time. Besides that, affordability measures omit housing prices' changes, interest rates and policy reforms that could have an impact on the effective demand.

Moreover, the research lacks a consideration of micro-level spatial differences of talukas within Ahmedabad and is thus limited in detailed spatial planning. Hence, the findings should be seen as illustrative, providing a broad planning guide rather than an exact forecast.

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APPENDIX

Appendix Table A1: Forecasted Population of Ahmedabad District Using Multiple Models (2022–2027)

Year	Quadratic	ARIMA (1,2,0)
2022	8,569.74	9,211.36
2023	8,717.66	10,146.81
2024	8,866.95	11,075.75
2025	9,017.62	12,002.82
2026	9,169.65	12,929.36
2027	9,323.05	13,855.76
R^2	0.985	0.992
Std.Error	0.141	0.114
F-Value (P-value)	0.001	0.001

Appendix Table A2: Year-wise Housing Need in Ahmedabad Based on Household-Based Projection Method (2022–2027)

Year	Projected Population ('000)	Projected Households ('000)	New Need ('000)	Replacement + Obsolescence (0.7%)	Vacancy (5%)	Total Housing Need
2022	8,569.74	1,904.39	32.87	13.33	95.22	**141,420**
2023	8,717.66	1,937.26	33.17	13.33	96.86	**143,590**
2024	8,866.95	1,970.43	33.49	13.56	98.52	**145,800**
2025	9,017.62	2,003.92	33.78	13.79	100.20	**148,010**
2026	9,169.65	2,037.70	34.09	14.03	101.89	**150,250**
2027	9,323.05	2,071.79	32.87	14.27	95.22	**141,420**

Appendix Table A3: Total Household Projection for Ahmedabad District by Age Cohorts (2022–2027)

Year	15–24 HHs	25–34 HHs	35–44 HHs	45–59 HHs	60+ HHs	Total HHs
2022	194,261	740,425	539,894	642,731	342,790	**2,090,161**
2023	197,532	753,112	549,203	653,823	348,687	**2,102,357**
2024	200,862	766,012	558,672	665,142	354,692	**2,115,380**
2025	204,252	779,130	568,305	676,692	360,808	**2,129,187**
2026	207,704	792,471	578,106	688,478	367,037	**2,143,796**
2027	211,220	806,040	588,079	700,506	373,381	**2,159,226**

Appendix Table A4: Housing Need Estimation Using Component-Based Method (2022–2027)

Year	New HHs	Replacement (0.7%)	Vacancy (5%)	Backlog	Total Need
2022	–	14,631	104,508	10,000	**129,139**
2023	12,196	14,631	105,118	10,000	**141,945**
2024	13,023	14,716	105,769	10,000	**143,508**
2025	13,807	14,804	106,459	10,000	**145,070**
2026	14,609	14,904	107,190	10,000	**146,703**
2027	15,430	15,006	107,961	10,000	**148,397**

Appendix Table A5: Housing Need Forecast by Affordability–Income Distribution Method (2022–2027)

Year	New HHs	EWS (32%)	LIG (28%)	MIG (25%)	HIG (15%)	Backlog	Total Housing Need
2022	20,161	6,451	5,645	5,040	3,024	10,000	**30,160**
2023	12,196	3,903	3,415	3,049	1,829	10,000	**22,196**
2024	13,023	4,167	3,646	3,256	1,953	10,000	**22,202**
2025	13,807	4,418	3,866	3,452	2,071	10,000	**23,807**
2026	14,609	4,675	4,090	3,652	2,191	10,000	**24,608**
2027	15,430	4,938	4,320	3,857	2,314	10,000	**26,859**