Growth Projections to 2050
In Moore County, North Carolina
and Associated Public Policy Implications

May 2024

Executive Summary

Population growth has been persistent in Moore County for more than four decades, with the combined micropolis of Pinehurst, Southern Pines, and Aberdeen consistently attracting about half of the increase. Virtually all population growth has been due to migration into the county, as the natural growth rate (births less deaths) has been consistently near zero. Moore County population expansion through 2050 is expected to exceed the projected 1.1% annual growth rate projected for North Carolina overall and be nominally five times higher than the 0.3% annual growth rate forecasted for the United States. Following a modest population decline in 2020, building permit expansion in 2020 through 2022 led to concomitant strong population growth. However, 2023 growth returned to the general trend prior to the pandemic. In addition, recent trends indicate a shift to more families with children as indicated by an increase in occupants per housing unit as applied to new units.

This paper describes three population growth cases that estimate the 2050 population in Moore County:

High Case: 180,000 (driven by record high migration and strongly accommodative public policy)

Nominal Case: 145,000 to 155,000 (reflective of historic trends and some infrastructure constraints)

Low Case: 135,000 to 145,000 (a result of lower migration and/or less accommodative public polices)

The **High Case** is based upon the 2023 North Carolina Office of State Budget and Management (OSBM) population projection for Moore County, identifying the county as one of the top seven fastest growing counties in North Carolina and forecasting a 2050 population of 180,000, as compared to approximately 100,000 in 2020. This projection treats the post-pandemic record growth rates of 2021-2022 as a "new normal," forecasting a record growth rate of 2.5% through 2030, followed by a declining trend to historic norms by 2040. This case calls for pro-growth public policies by municipal, county and state governments to ensure growth is unconstrained. Significant infrastructure expenditure and timely execution of expansion projects would be required to support the estimated 1200 new housing units that would be required annually.

The **Low Case** is based upon mathematical modeling derived from historic trends. All micropolis municipalities and Moore County would need to enact policies that would moderate growth to approximately 1% per annum. This may include limiting annual building permits to around 550 county-wide housing units, establishing minimum lot sizes, and restraining high density housing complexes.

The **Nominal Case** expects long term trends to continue, with public policy supporting historic growth patterns and timely, but proportional infrastructure expansion. This case views the post-pandemic record growth rates of 2021-2022 as a bubble, not as a new trend as does the high case. Public policies may need to moderate from existing pro-growth positions, especially if migration demand exceeds long term trends.

Population forecasts are constructed based upon assumptions, regardless of source. The Moore County 2050 population in actuality may come to as low as 135,000 or as high as 180,000, depending upon the magnitude and duration of migration into the county combined with state, county and local growth policies. Public policy decision makers have the authority and influence to align policies, zoning ordinances and infrastructure expansion with the growth aspirations of their constituencies.

Introduction

Population growth projections underlie virtually all infrastructure planning including roadways, water systems, schools, power and tax systems. The purpose of this paper is to characterize a diverse set of population forecasts for Moore County North Carolina demonstrating that a range of growth outcomes is possible depending on the underlying assumptions. Three projections are described herein: high, nominal and low, based on different assumptions relating to growth, such as the rate of migration, infrastructure capacity, and public polices relating to population expansion. We also outline several considerations which might be adopted by decision makers to maximize, moderate, or minimize growth. We use 2050 as an anchor point to be consistent with others who are making such projections.

US Population Growth Projections to 2050

Considering the US at large, the Census Bureau currently estimates the 2023 population of the United States at 336 million. What will be our population in 2050? Various agencies and NGOs have been asking this question for some time. Looking at prior projections, we see they have been steadily declining as shown in Table 1 and Figure 1.

Table 1
US Population Projections Out to 2050

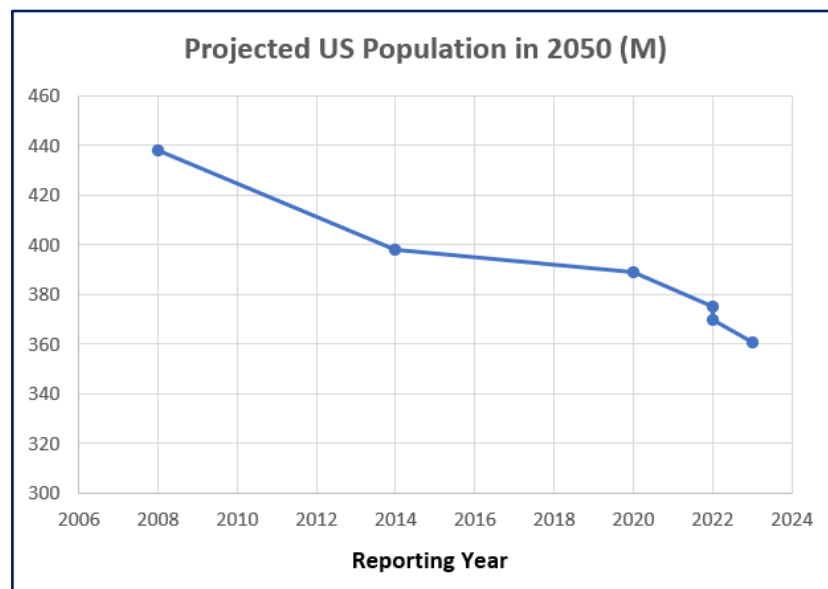| Reporting Year	2050 Projection (M)	Source
2008	438	Pew Research Center
2014	398	Statista Research
2020	389	US Census Bureau
2022	375	UN Population Division
2022	370	Congressional Budget Office[1]
2023	361	US Census Bureau

Figure 1
US Population Projections to 2050

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[1] The Congressional Budget Office Forecast shows 373M by 2053, ratio adjusted to 370M for 2050

For the purposes of this paper, we use 365M (the average of the 2022 CBO and 2023 US Census Bureau projections) as the 2050 forecast figure, an 8.6% increase of 29M people, or approximately 0.3% per annum. The primary factors driving this increase are:

- US growth will be increasingly driven by immigration as fertility rates continue to decline.
- A national total fertility rate of 2.1 is required to maintain population equilibrium while the 2023 US total fertility rate is 1.7, with the United Nations forecasting a stable rate through 2050.
- By 2042, forecasts predict the annual number of deaths will exceed the annual number of births, with the consequence that national population growth will be driven entirely by immigration.

North Carolina Population Growth Projection to 2050

According to the U.S Census Bureau, the population of North Carolina in 2023 is 10.8M. The North Carolina Office of State Budget and Management (OSBM) projects a 2050 statewide population of 14.0 million, a 29.6% increase, or approximately 1.1% per annum.

Moore County Population History

According to World Population Review, the population of Moore County increased by 41% over the 22 years since the year 2000, a Compound Annual Growth Rate (CAGR) of 1.6%. As seen in Table 2:

- Between 2000 and 2010, the increase was 18% (1.7% CAGR)
- Between 2010 to 2020 the increase was 13% (1.3% CAGR)
- Growth strongly accelerated in 2021 and 2022 following a population decline of nearly 1% in 2020
- Growth moderated in 2023 to 1.3% versus 2022, the smallest single year rate of increase since 2015

Table 2
Moore County Population History

Year	Population	Increase	Rate	CAGR[2]
2000	74,769	---		
2010	88,247	13,478	18.0%	1.7%
2020	99,727	11,480	13.0%	1.2%
2023	106,898	7,171	7.2%	2.3%

The Moore County population history since 2000 has been almost entirely due to migration into the county as birth rates and death rates have consistently been remarkably stable and almost perfectly counterbalanced, yielding near zero impact on county growth rates. Over the past two decades, the Pinehurst-Southern Pines-Aberdeen micropolis has garnered the majority of growth:

- A 58% share between 2000 to 2010
- An 86% share between 2010 to 2020
- A 59% share from 2020 to 2023.

Historical Moore County Population Growth Drivers

Population growth in Moore County is sustained by a variety of favorable elements:

State Income Tax:

The current state tax rate of 4.75% compares favorably to other states and has been declining from 5.75% in

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[2] https://www.investopedia.com/terms/c/cagr.asp

2016 and is projected to decline to 3.99% after 2025. The NC tax rate is lower than neighboring states:

- Virginia & Georgia: 5.75%
- South Carolina: 6.4%
- Georgia: 5.75%

Significant migration also comes from states with higher (and progressive) tax rates: New York (up to 10.9%) and California (up to 12.3%). Maryland and New Jersey both have significantly contributed to North Carolina's population and both have progressive income tax structures, up to 5.75% and 10.75% respectively. Despite Pennsylvania's flat tax of 3.07%, net migration to North Carolina has recently been significant.

Location:

Despite its rural nature, Moore County is within reasonable proximity to both Charlotte and Raleigh, providing access to airports, shopping, cultural events, restaurants, and both professional and college sports teams. Major universities are within easy driving range.

Quality of Life:

Golf is abundant while both mountains and ocean are easily accessible. Weather is temperate, less hot and humid versus the deep south with milder winters versus the northeast. Healthcare is excellent. Personal security and safety compares favorably to the North Carolina average. Small town charm is abundant. North Carolina is a "purple" state, with a political balance between Democrats and Republicans.

Retirement, Golf & Equestrian:

The area has been attractive to retirees, driven by cost of living, location and quality of life. This seems unlikely to abate, especially with the USGA transition to Pinehurst and it's long term commitment to hosting future U.S. Open events on Pinehurst #2.

Moore County has a lengthy history as a strong equestrian community and is home to the 4000 acre Walthour-Moss Foundation. The Carolina Horse Park also attracts competitors from around the world.

Urban Flight & Remote Working:

Post-pandemic, North Carolina returned to its typical annual population growth rate of about 1.1%. However, the growth rate in Moore County rose from a 1.7% annual average in the period 2010-2020, to 2.5% for 2021 and 2022. Uncertainty exists as to the duration of this accelerated migration rate.

Economics:

A robust statewide economy underpins Moore County's growth, with the area also serving as a traditionally strong retirement location and recently experiencing an influx of younger families. Property taxes are modest and the cost-of-living index compares favorably to Pennsylvania and the Northeast, as well as Georgia, Florida and Virginia. According to Forbes, in 2024 North Carolina's median home price is $363,000, which is nationally middle of the pack. Moore County's median home price is $401,000 according to Realtor.com.

Natural Growth and Migration[3]

This paper is focused on overall population growth and does not undertake assessments for race, gender, religion or other types of demographic representations.   Population growth is considered to be comprised of both natural growth (difference between births and deaths) and migration into the county. For the US, both the Congressional Budget Office and the Census Bureau project Total Fertility Rates to be relatively stable through 2050 at approximately 1.65. However, the U.S. population due to natural growth is forecasted to decline gradually until 2043, after which the net effects of fertility and mortality becomes increasingly net negative as deaths exceed births to an increasing extent. After 2043, all US population growth is forecast to come from migration.

From 2011 to 2020 the U.S. birth rate declined 8.1% (from 13.05 to 11.99 births per 1000 people), while in Moore County, the rate increased 12.3% (from 10.40 to 11.68).

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[3] National Center for Health Statistics

From 2011 to 2020 the U.S. death rate increased 9.0% (from 8.15 to 8.88 deaths per 1000 people), while in Moore County, the rate increased 14.1% (from 11.1 to 12.6). The U.S. forecast shows a continuing increase in the death rate to 10.57 by 2050. The Moore County death rate between 2011 to 2020 averaged 3.3 deaths per 1000 higher than the U.S. death rate, possibly related to the larger segment of population over the age of 65 in Moore County. In 2022, 17.1% of the U.S. population was over age 65, while in Moore County it was 23.9%. The U.S. over 65 population is projected to rapidly increase to 21% by 2030, and then stabilize at 22% by 2040 through 2050.

By itself, the net effect of the forecasted birth and death rates would result in a modest negative growth impact. Between 2011 and 2020, the average natural population attrition was 52 per year (0.05%). Assuming Moore County fertility and mortality follows US forecasted trends, our modeling shows for the period between 2020 to 2030, the average annual attrition will be 154; for 2030 to 2040 the average annual attrition will be 296; for 2040 to 2050 the average annual attrition will be 521. For the long term forecasting period, all population growth in Moore County will be nearly entirely due to migration into the area, off-set by a 0.2% average natural attrition rate.

High Case

The North Carolina Office of State Budget and Management updates annually their population forecasts for both the state and individual counties. The 2023 version, or "vintage," for Moore County is summarized in Table 3.

Table 3
Moore County Population Projections to 2050 by North Carolina OSBM

Year	2023 Vintage	CAGR	Natural	Migration	10 Year Net
2000	74,769	---	---	---	---
2010	88,247	1.7%	(378)	13,856	13,478
2020	99,727	1.2%	(755)	12,235	11,480
2030	127,057	2.4%	(1,540)	28,825	27,355
2040	153,607	1.9%	(2,960)	29,510	26,550
2050	179,890	1.6%	(5,210)	31,493	26,283

The NC OSBM 2023 vintage forecast reflects the following assumptions:

1) The OSBM projections are unconstrained by infrastructure limitations, that would require all jurisdictions in Moore County to fully commit to eliminating all constraints to achieve a 2050 population of 180K.
2) We have not validated how the growth rate is estimated by OSBM
3) OSBM assumes the 2.7% growth in 2021 and 2.5% growth in 2022 was not a bubble and continues at a 2.4% Cumulative Average Growth Rate to 2030. It does not treat the 2020 population reduction of 0.8% (negative 0.8% growth) as a pandemic induced outlier with a two year recovery.
4) The post-pandemic growth rate of 2.5% continues at record levels through to 2030, reducing to 2.1% for the 2030's, and to 1.7% for the 2040's.
5) State, county, and local authorities may be compelled to continue public policies that are strongly accommodative to growth, likely requiring significant spending and borrowing to expand infrastructure, schools, and services. In addition, significant increases in the property tax rate base along with water and sewer charges (including system development fees, tap fees, and usage rates) may be difficult to avoid.

As shown in Figure 2, according to OSBM, Moore County will be one of the top seven fastest growing counties in North Carolina, projecting net growth of 70% between 2022 and 2050. Examination of Figure 2 reveals the following:

- Most of the counties that are projected by OSBM to have the most significant growth are at the intersections of major transportation routes (Mecklenburg, Iredell, Wake, and Brunswick)

- OSBM projects a paltry 2% growth in Cumberland County, which hosts Fayetteville and Ft. Liberty. However,

the adjacent Harnett and Hoke county populations are projected to increase at nearly 25 times the rate of Cumberland County.

- OSBM projects Moore County growth to be double that of Lee County; however, Sanford has seen significant industrial and residential developments amid NCDOT projects that are transforming US-421 to a major transportation route.
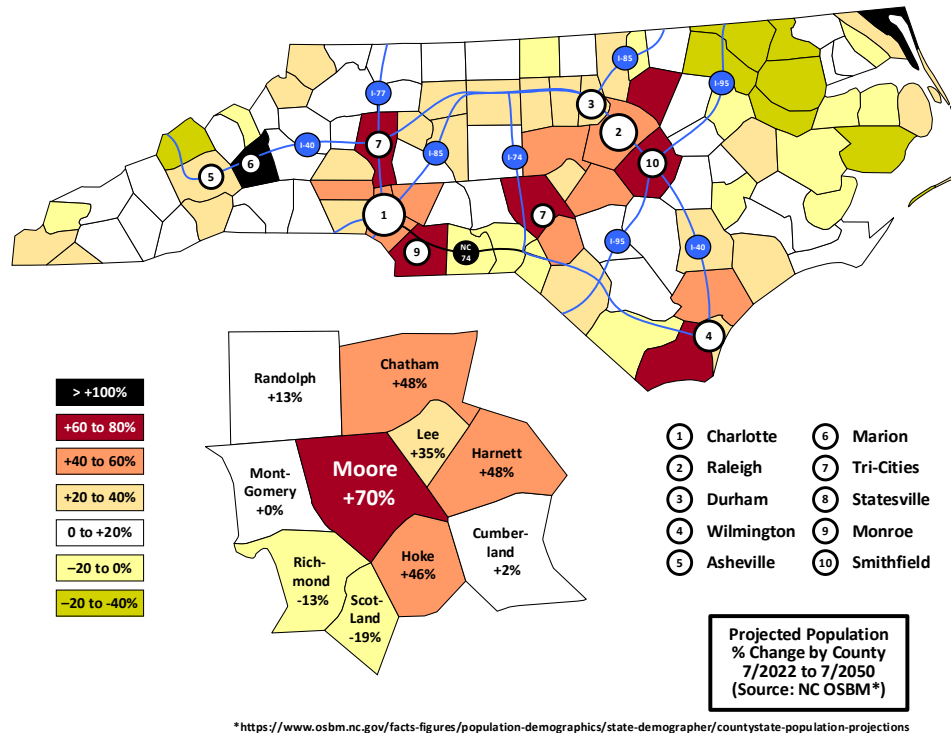

Figure 2
NC OSBM Growth Projections to 2050, by County

The OSBM projection indicates a Moore County 2050 population of 180,000. This projection indicates a 2023 to 2050 compound average growth rate of 1.9% per annum, which is more than four times the projected US growth rate and more than 1.7 times the projected NC growth rate. We have classified the 2023 vintage OSBM projection as a *High Case* due to its dependence upon unprecedented levels of growth for extended periods, strongly accommodative public policy on the part of all relevant governments, and assumptions that necessary infrastructure expansion projects, especially water, can be delivered quickly enough to avoid hinderances to this level of growth.

Low Case

An alternative and broadly accepted methodology to the OSBM population projected for Moore County is to use statistical trend modeling. Figure 3 provides a ten-year moving average of the annual rate of growth in Moore County between 1982 and 2023. A linear trend of this historical moving average indicates the rate of growth in Moore County is slowly declining at 0.03% per annum.
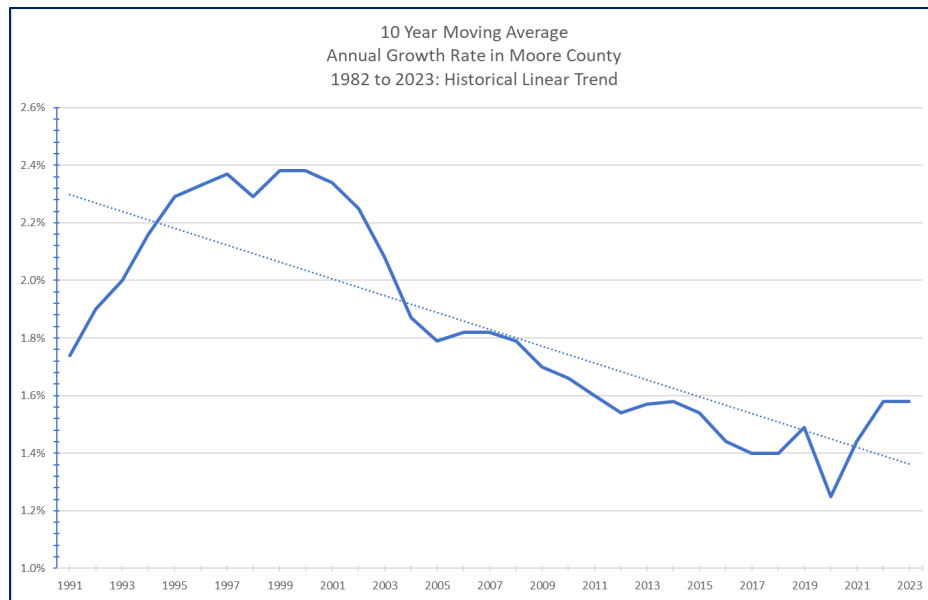
Figure 3
Ten Year Moving Average, Moore County Annual Growth Rate from 1982 to 2023

Figure 4 takes the linear trend provided in Figure 3 out to 2050. The linear trend shows a 0.03% per annum decline in the rate of growth, which by 2050 will result in a growth rate of 0.5%
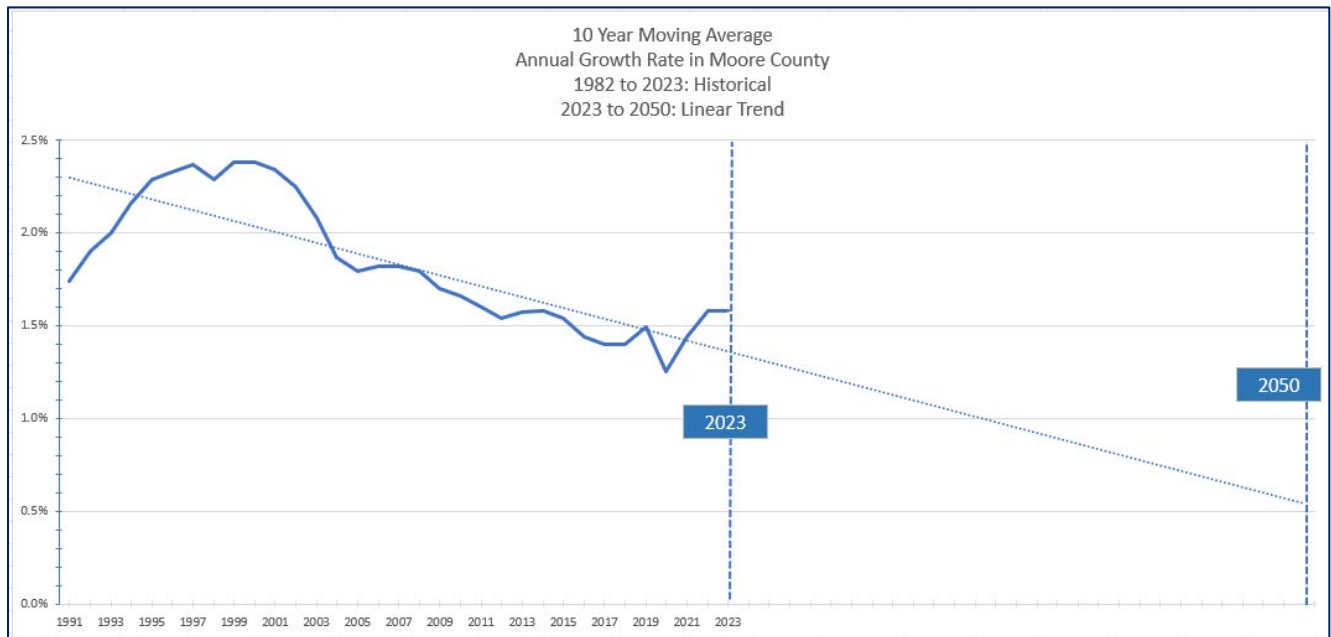

Figure 4
Moore County Growth Rate Linear and Exponential 10 Year Moving Average Trends to 2050

Additionally, the Moore County population growth has been strongly correlated with housing permits, with a slight lag effect due to the time between the issuance of a permit and owner occupancy. Significant increases in building permits between 2016 and 2022 have led to a corresponding growth in population, with the statistics indicating younger couples with children taking an increasing share of the new units. Table 4 lists the Moore County housing history over several periods between 2001 and 2022.

Table 4
Moore County Housing History

Period	Average Permits/Yr.	Average New Units/Yr.	Completions	Average Growth/Yr.
2001 - 2010	711	637	90%	1,313
2011 - 2015	506	554	109%	1,162
2016 - 2018	738	719	98%	1,635
2019 - 2022	940	594	63%	1,475

If the leadership across all Moore County jurisdictions wish moderate growth, rather than unconstrained growth, this could conceivably be accomplished by limiting the number of building permits issued on an annual basis. For example:

- Limiting new building permits to 550 per annum would yield a growth rate of approximately 1% resulting in a 2050 population of 140,000.
- A limit of 700 building permits per annum would engender a 2050 populace of 150,000
- 1100 new permits a year are required to achieve the NC OSBM figure of 180,000.

A permit limit of 700 is similar to the historical average of annual building permits between 2000 and 2022, which was 708, and includes both the lean post Great Financial Crisis period, as well as the post Pandemic boom period. Therefore, for a Low Case to be feasible, an annual limit of 550 housing units would be required for the 2050 population to top out at 140,000. However, it is also underpinned by the declining rate of growth.

Local authorities can also regulate growth by tightening or loosening restrictions in zoning, use cases specified in land use plans, and local ordinances that govern land uses by right, conditional uses, and special uses.

Also, since growth is driven by migration into Moore County, any significant reduction in migration, for any number of reasons, would contribute to a Low Case scenario. In addition, water supply from municipal water systems may have a significant effect on growth, especially for higher density developments, as lower density developments (single home, 1 acre or more) may be served by well and septic systems. The current favored plan for the Moore County water system to become independent of all external water sources faces hurdles including high capital cost, regulatory constraints concerning inter-basin transfers, and political pressure from customers due to potentially significant water rate increases.

Infrastructure constraints include transportation. While villages, towns and cities may own their public roads and streets, most of the transportation infrastructure in Moore County is owned by the state or federal government under the jurisdiction of their DOTs and associated regulations. Additional infrastructure constraints include schools as well as police and fire services. In this case, decision makers must grapple with the cost of these services and the extent to which local taxes recover the expenses. Studies indicate that residential taxes cover around 70% of the cost of services they require, while commercial and industrial enterprises tend to pay more taxes than their associated cost of services.

The Low Case projection indicates a Moore County 2050 population of 135,000 -145,000. This scenario is predicated upon long term declining growth trends along with a reduction in migratory demand and/or public policies that support growth limitations.

Nominal Case

As would be expected, the Nominal Case is intermediate between the High Case and the Low Case and does not require the extraordinary conditions inherent in these other cases. As such, it may also be expected to be the most probable. This case is more closely aligned with historic trends and the associated long term slightly downward trend in the population growth rate, which is also consistent with scale effects impacting growth rates.

The Nominal Case involves several working assumptions:

1) The post pandemic growth surge was a temporary bubble driven by low interest rates, government largess,

remote working, and urban flight,

2) The rate of migration decays over a 3 to 5 year period to align with historic trends (i.e., regression to the mean) of around 1.6% to 1.7%,

3) Public policies align with some moderation in growth, thus avoiding infrastructure over-building.

Table 5 lists the ten year annual population growth for Moore County. Year to year, the population change varies significantly. Over the decade from 2014 to 2023, the highest growth rate was 2.7% in 2021 while the lowest growth rate was negative 0.9% in 2020. The average growth rate for the 10 year period was 1.6%. The first five years (2014-2018) was 1.6%, while the second five years (2019-2023) was also 1.6%. The growth rate in 2023 of 1.3% was the weakest annual figure since 2015.

Table 6
Moore County Ten Year Population History

Year	Population	Year Over Year Change	% Change
2014	92,849	1,458	1.6%
2015	94,057	1,208	1.3%
2016	95,458	1,401	1.5%
2017	97,376	1,918	2.0%
2018	98,961	1,585	1.6%
2019	101,167	2,206	2.2%
2020	100,296	(871)	(0.9)%
2021	103,044	2,748	2.7%
2022	105,491	2,447	2.4%
2023	106,898	1,407	1.3%

The Nominal Case projection indicates a 2050 Moore County population of 145,000 - 155,000.

This scenario is predicated upon long term growth trends following historic patterns, based upon the consistent ten year pattern of annual growth averaging 1.6%, despite annual fluctuations.

Conclusion

The 2050 population in Moore County is likely to be as little as 30%, and as much as 80% higher than it was in 2020.

The High Case requires sustained, record levels of migration leading to unconstrained growth enabled by strongly accommodative public policies.

The Low Case reflects the possibility of lower than historical migration, public policies that are much less accommodative, and the potential for black swan events.

The Nominal Case reflects a continuation of the historic immigration rate (slightly declining over time) and public policies which slightly moderate growth. Public support for moderate growth will likely play a significant role in determining public policies undertaken by elected officials.

The long term reality of Moore County population growth will be based on actual migration as well as public policies and infrastructure decisions.

State, County, Pinehurst, Southern Pines, and Aberdeen governments have the statutory power and authority to either accelerate or slow the rate of growth.