Group Project 1: Population Projections
Franklin County, Ohio

CRP 761 Project 1

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Executive Summary

This report is an analysis of population growth trends in Franklin County, Ohio. It uses data forecasting methods, census data and matrices to predict the county's population up to the year 2025.

Overall the population in Franklin County is younger, reports a higher median household income, and has a higher level of educational attainment than the state of Ohio. Historically Franklin County has enjoyed a linear growth and, in general, the county has not experienced the same population fluctuations as other counties in Ohio. Whether this is because the county hosts the state capitol, its land use policies that favor annexation or the presence of the Ohio State University's presence is beyond the scope of this paper.

To document a more thorough population analysis this report used a cohort-component projection to calculate Franklin County's population into 2025. Census data was used to formulate a natural growth matrix consisting of both birth rates and survival rates. Migration rates were determined comparing the 2005 natural growth population to the Ohio Department of Development's population projection for 2005. Overall, predictions show Franklin County is expected to have a total population of 1,230,407 people in 2025, an increase of 15% from its population in 2000. Within the population, there is projected to be an increase in the age groups 50 and over while the population ages 25 to 49 is expected to decline. Given these results, we recommend specific policies for population growth.

With the population of working-aged residents (ages 25 to 49) predicted to decline, the county is likely to experience a shrinking tax base. This will have implications for other sectors of the population (the young, the elderly, the poor, etc.) that rely on tax revenue to fund programs they use. Therefore Franklin County should implement policies to retain and attract younger residents by promoting job creation and providing economic incentives for homeownership in the county. Meanwhile, policies must also be implemented to accommodate the projected growth in the population age 50 and over. This demographic group is likely to require an increase in transportation services as well as other social services as they age. In addition, diverse housing options should be made available as aging baby boomers seek to downsize and move to smaller residences.

In conclusion, given that Franklin County is expected to experience an increase in population over the next fifteen years, it must make provisions to retain the younger population and also provide for an aging population. This will ensure that Franklin County remains economically viable and an attractive place to live.

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I. Introduction

Although it is impossible to know with complete accuracy what population changes will take place from year to year, the ability to infer probable population numbers from current and historical data is vital to good planning practice. Knowing future demographics provides an opportunity to revise land-use patterns and services accordingly, and warns of increases or decreases in tax revenue that will affect them. This project uses population data from the 2000 US Census to project the population of Franklin County, Ohio in the year 2025. Population predictions were made using both aggregate and disaggregate models. A brief overview of Franklin County and its demographics as compares to the state of Ohio precedes population forecasts.

II. Franklin County

History and Location
Franklin County, named in honor of Benjamin Franklin, was established on April 30, 1803 by the State of Ohio. Covering an area of 540 square miles of central Ohio, Franklin County was predominately rural and agricultural. However with the designation of Columbus as the state's capital in 1812, an increasing number of people were attracted to the city. Over the course of the following two hundred years, Columbus continued to expand with urban land overtaking into rural areas as the population increased. (County Commissioners' Association of Ohio, 2010)

Government Structure
Franklin County is made up of thirteen cities, twelve villages, and seventeen townships. The thirteen cities include Bexley, Columbus, Dublin, Gahanna, Grandview Heights, Grove City, Hilliard, Pickerington, Reynoldsburg, Upper Arlington, Westerville, Whitehall, and Worthington. Its villages are Brice, Canal Winchester, Groveport, Harrisburg, Lockbourne, Marble Cliff, Minerva Park, New Albany, Obetz, Riverlea, Urbancrest, and Valleyview. The seventeen townships in Franklin County are Blendon, Brown, Clinton. Franklin, Hamilton, Jackson, Jefferson, Madison, Mifflin, Norwich, Perry, Plain, Pleasant, Prairie, Sharon, Truro and Washington.

The Franklin County Board of Commissioners oversees the cities, villages, and townships. Consisting of three commissioners, the Board sets overall policies and oversees departments under their control, and acts as the legislative and executive branches of county government. In addition to the Board of Commissioners, the county is also served by an auditor, clerk, sheriff, treasurer, and recorder, all of whom are officials elected to serve four year terms (Franklin County Board of Commissioners, 2010).

Physical Characteristics
Franklin County's land use and land cover has transitioned from predominately rural and agriculture to urban. Based on 2000 Census data, 61.05% of the county is considered urban

while only 22.71% remains in agricultural use (Table 1). The variety of land uses reflects the diverse levels of development in Franklin County from the urban areas of Ohio to the suburbs and rural townships.

Table 1: Franklin County Land Use/Land Cover

Land Use/Land Cover	Percent
Urban (residential, commercial, industrial, Transportation and urban grasses)	61.05%
Cropland	22.71%
Pasture	1.48%
Forest	13.60%
Open Water	0.92%
Wetlands (wooded and herbaceous)	0.00%
Bare/Mines	0.23%

(U.S. Census Bureau, 2000)

Economic and Social Characteristics

Median Household Income

The median household income for Franklin County in 1999 was $42,734 (U.S. Census Bureau, 2000). Table 2 illustrates the median income distribution of Franklin County. The generally even distribution of income brackets across the population indicates a diverse economy that is able to sustain the current population if not enable its growth. However, it is also worth noting that a high percentage of Franklin County residents report incomes below the poverty line (8.9%) indicating a sizable need for social services and public transit networks.

Table 2: Household Income in Franklin County

Household Income	Percent
Less than $10,000	8.9%
$10,000 to $19,999	11.2%
$20,000 to $29,999	13.2%
$30,000 to $39,999	13.1%
$40,000 to $49,999	10.6%
$50,000 to $59,999	9.8%
$60,000 to $74,999	11.1%
$75,000 to $99,999	10.5%
$100,000 to $149,999	7.6%
$150,000 to $199,999	2.0%
$200,000 or more	2.0%

(Ohio Department of Development, 2000)

Population Distribution: Urban v. Rural

The vast majority of Franklin County residents reside in urban areas. Therefore, the majority of population changes that occur in the county will be within its urban boundaries. Demands on

existing utility infrastructure within these areas will rise in accordance to an increasing population (Ohio Department of Development, 2000).

Table 3: Population of Franklin County by Location

Location	Number of Residents
Urban	1,049,003
Inside urbanized areas	1,046,416
Inside urban clusters	2,587
Rural	19,975

Population by Age

Franklin County has a median age of 32.5 with the age groups somewhat evenly distributed across genders until 60. The bulk of the population is in their prime wage-earning years and is of child-bearing age (Figure 1). Depending on the birth rate of the county, this may have a positive effect on population growth assuming that the out-migration is not too high. (Ohio Department of Development, 2000).

Figure 1: Franklin County Population Pyramid, 2000

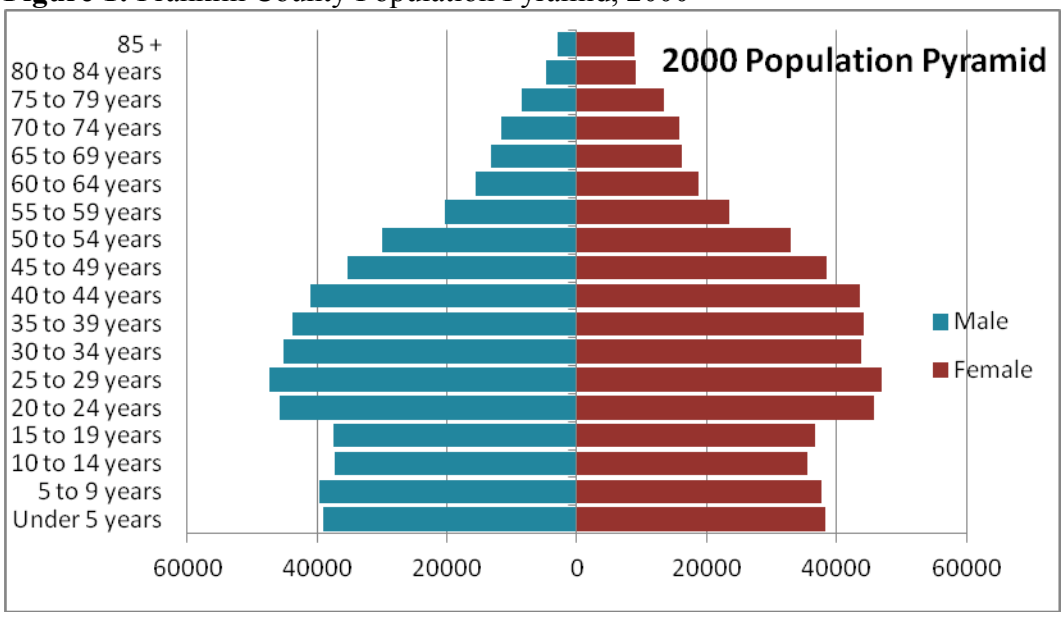


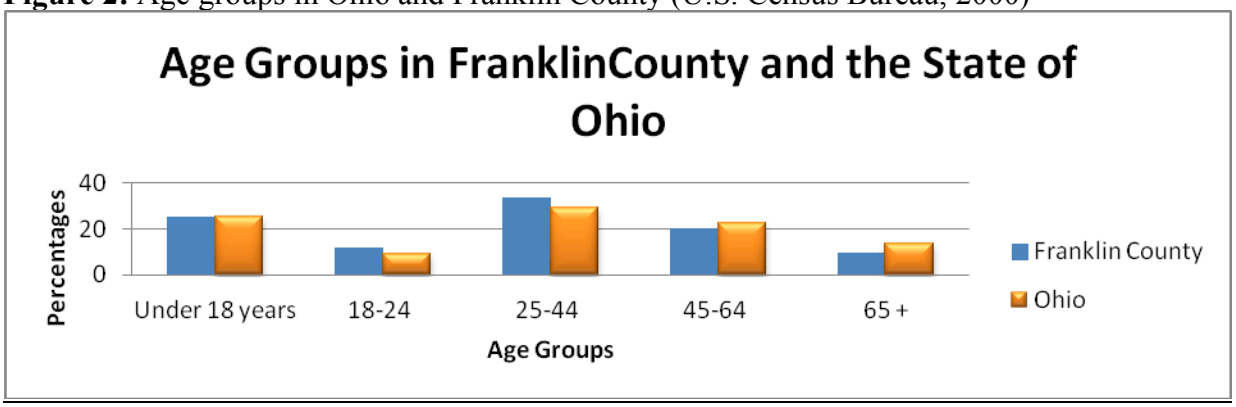
Figure 1: Franklin County Population Pyramid

III. Franklin County vs. Ohio

Age

For the year 2000, the state of Ohio and Franklin County's age groups display a moderately young population with a median age of thirty-two. The second largest age group is under 18 for both Ohio and Franklin County, placing a great demand on educational services. It is also worth nothing that, for both Franklin County and Ohio, a comparatively small percentage of residents is in the 18 -24 age group. This may reflect college students who leave the state for post-secondary education and remain outside the state of Ohio.

Figure 2: Age groups in Ohio and Franklin County (U.S. Census Bureau, 2000)



Gender

Females slightly outnumber males in both Ohio and Franklin County. A high number of females in a population increases the likelihood of high natural growth. Figure 1 suggests this may be partially due to the relative longevity of women as females significantly dominate age groups above 60.

Table 5: Gender in Ohio and Franklin County (U.S. Census Bureau, 2000)

Franklin County			**Ohio**		
Males	Females	Total	Males	Females	Total
48.5%	**51.5%**	**100%**	**48.5%**	**51.5%**	**100%**

Educational Attainment

Franklin County's population has a higher level of educational attainment than the population of Ohio on the whole. In Franklin County, 65% of the population over 25 has at least a Bachelor's Degree compared to 42% of the population of Ohio. Having a highly educated population indicates that Franklin County may have a better economic infrastructure than Ohio overall (see figures 4 and 5).

Figure 4: Educational Attainment in Ohio

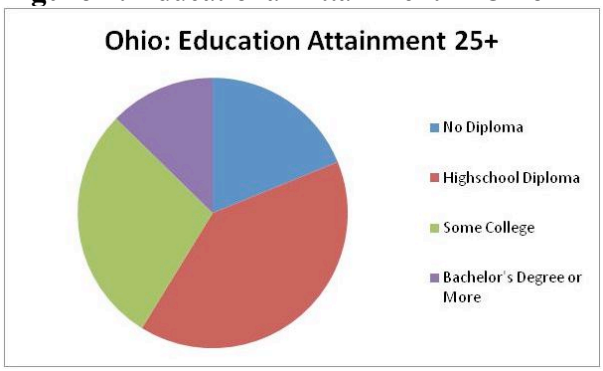
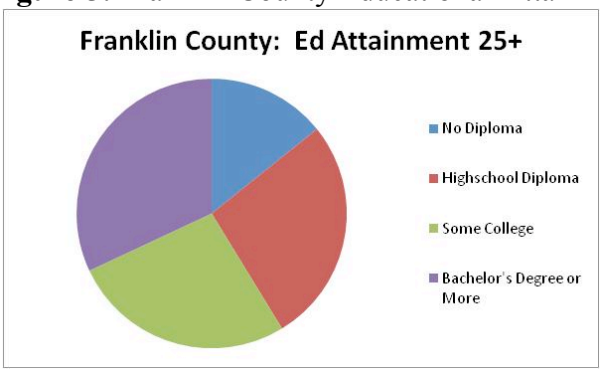


Figure 5: Franklin County Educational Attainment

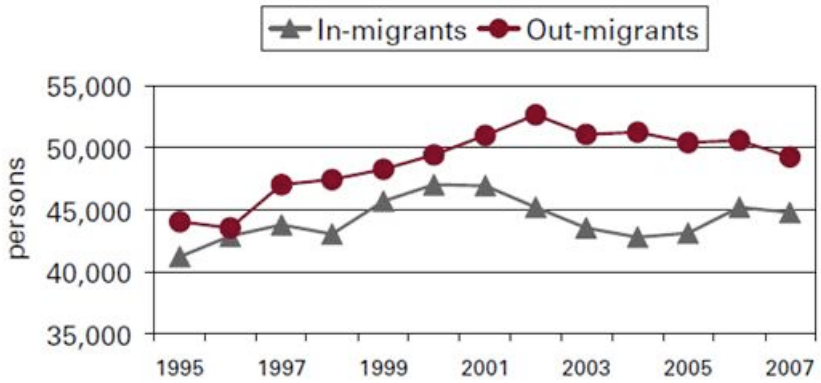


(U.S. Census Bureau, 2000)

Migration

Although Franklin County is one of the few counties in Ohio with population growth, the number of out-migrants exceeded the number of in-migrants (see Figure 6). This is consistent with the state on the whole, as Ohio Counties lead the nation in population loss (Associated Press, 2008). Among those leaving the state, there is a high concentration of young professionals. From 1990 to 2004, the number of Ohio residents ages 25 to 34 declined by approximately 19% statewide (Center for Family and Demographic Research, 2007). This could be a compounding problem for the state as potential wage earners leave Ohio and the current population ages and retires.

Figure 6: Franklin County Migration, 1995 to 2007



(Ohio Department of Development, 2000)

IV. Population Projections

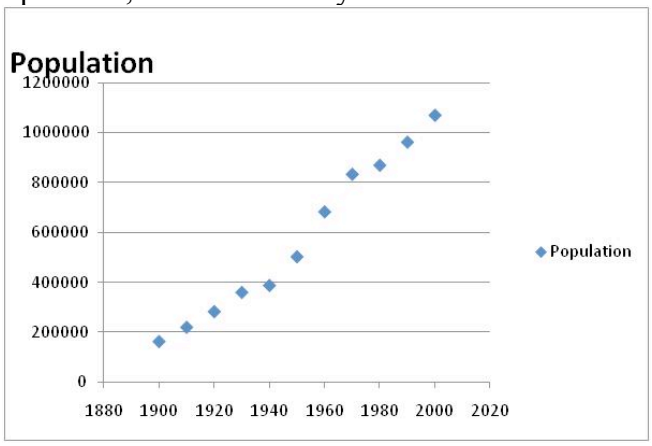
There are two methods of population forecasting: aggregate and disaggregate. Aggregate models looks at population trends while disaggregate models use current data to predict how a population will change over time. This report utilizes both aggregate and disaggregate forecasting models to predict population growth for Franklin County in five-year increments from the years 2000 to 2025. The aggregate model will be discussed first in order to establish historical population trends in Franklin County.

Trend Aggregate Model

Selection of Population Projection Model

Historical information on aggregate population size was collected from the census periods beginning in 1900 and ending in 2000 (Ohio Department of Development, 2000). The aggregate population size from each census was then plotted on a scatter plot in order to check for trends over time. The resulting graph was highly linear in nature, indicating that the linear population growth model would be an appropriate forecasting tool (figure 7).

Figure 7: Aggregate Population, Franklin County 1880 to 2020



Linear Growth Model

A regression analysis was used to determine the appropriateness of the linear growth model. Because the line of best fit was very close to one (.9763), it was determined that there was a strong linear relationship and the population could be assumed to grow incrementally and somewhat constantly over time.

Figure 8: Population Projection for Franklin County, Linear Growth

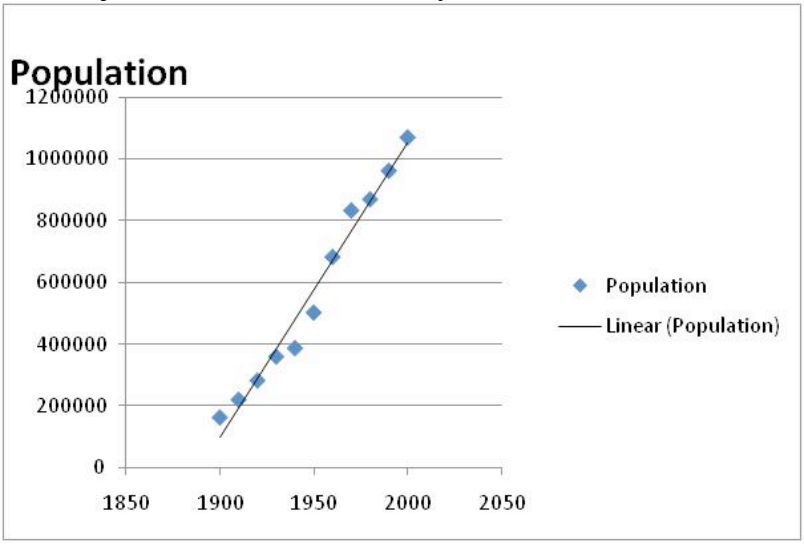


Table 6: Statistical Output, Line of Regression for Population Growth

Regression Statistics	
Multiple R	0.988
R Square	0.976
Adjusted R Square	0.974
Standard Error	5.3823
Observations	11

The population data appears to follow three distinct trends, the latest beginning in 1950. In order to compute the best possible model for population, it was determined that the most recent linear population trend would be used to predict Franklin County population into 2025. Projected population data from 2007 was also included in the analysis. As indicated by table seven, the linear relationship of this data set is even stronger at .9957, indicating its usefulness at a population prediction model.

Table 7: Line of Regression

Regression Statistics	
Multiple R	0.998
R Square	0.996
Adjusted R Square	0.994
Standard Error	0.943
Observations	4

Linear Model Population Projection Procedure

To begin the population projection for 2025, the population data for 1950 census up to and including 2000 census were gathered and entered into spreadsheet. The total change in population was then calculated and divided by five to find the average increase in population per every 10 years. This produced a total increase in population of 113,113.6 people every 10 years. To find the increase in population per year, this figure was divided by 10 for a total change of 11,311.36 in population per year. This figure is the incremental change per year.

Given this information, the data was then entered into the linear growth model Pn = Po + n * a, with "Pn" the population in the year 2025, "Po" the population today or 1,068,978 in 2000, "n" the number of increments or 25 years, and "a" the increment change in population per year, or 11,311.36 as previously calculated. The resulting population projection for Franklin County in 2025 is therefore 1,351,762.

Results

Using the linear growth model, the population of Franklin County will increase by a total of 282,784 people between 2000 and 2025. However, this model has several shortcomings. The linear growth model assumes that growth is constant, but this is rare in reality. The model also fails to take into account the natural carrying capacity of the land, implying that a population can grow indefinitely. This is of course not the case – at some point the land will reach a carrying capacity that will prevent further increase.

The linear growth model also does not indicate what sectors of the population are growing or how. Such lack of information may lead to poor planning and policy decisions. For example, knowing that the population will increase, Franklin County may be more likely to invest in short-sighted development projects in the downtown Columbus area under the assumption an increase in population will provide plenty of residents to support new developments and attractions. However, a population that is predominantly aged will have different preferences and needs than a youthful, loft-dwelling demographic group and the linear growth model does not indicate what age group of the population will grow. As such, development projects and services which the County implemented may go unused, leaving the County with financial difficulties. More information is therefore needed.

Cohort Component Model

The historical trend of Franklin County's population change is a useful model of the county and its expected growth. However, aggregate trend models provide no insight on population changes within age, gender or racial cohorts. Population changes within such groups are a proxy of socioeconomic information; successfully modeling population changes across a disaggregated population offers greater insight into policy and infrastructural needs of the study area. To this end, the Census 2000 population data for Franklin County was disaggregated by gender into

five-year age cohorts up to 85+. This information was then processed using the cohort component model to predict population changes for men and women in Franklin County in five year intervals from 2000 to 2025.

Methodology

The cohort component method assumes current birth, survival and migration rates remain more or less constant, and are therefore suitable for predicting population changes over time. Birth and death rates were found by tallying the total number male and female live births/deaths in a gender's age cohort. The birthrate is simply the total number of births divided by the total number of women in the given cohort group while the survival rate is one minus the death rate (total number of deaths divided by the respective age/gender cohort). Please reference Appendix A for a detailed explanation of methodology.

The birth and survival rates were used to compute natural growth for Franklin County. The natural growth model examines population change without taking in or out migration into account. Migration rates are a vital component of population change and a good indicator the desirability of an area and the health of its economy. In order to find these migration rates for Franklin County, the results of the natural growth model for 2005 were subtracted from a 2005 population forecast by the Ohio Department of Development (Appendix B). The result was the net migration for each age-gender cohort. These were divided by ODOD's age-gender cohort and, again, multiplied by five to represent change over a five year period. These three variables were then used to construct a Cohort Component matrix to find separate population predictions for men and women in Franklin County in five year intervals from 2000 to 2025. This process is also detailed in Appendix A.

Results

Table 8: Population Projection Results

	2000	2005	2010	2015	2020	2025	% Change
Men	519,283	537,967	556,888	573,086	587,903	601,520	16
Women	549,695	566,308	583,492	599,046	614,162	628,887	14
Total	1,068,978	1,104,275	1,140,379	1,172,131	1,202,064	1,230,407	15

The computed population changes of the Cohort Component method are similar to the projections predicted by the linear growth model – the total net growth varies by less than 100,000 between the two models. Furthermore, the net results of Table 8 exhibit the same linear trend as the historical data (Figure 8). Despite their similarities, however, the disaggregated model is the more useful population projection tool as it indicates where and how the growth is occurring.

Table 9: Comparison of Models

2025 Population	
Linear	Cohort

Growth	Component
1,325,102	1,230,407

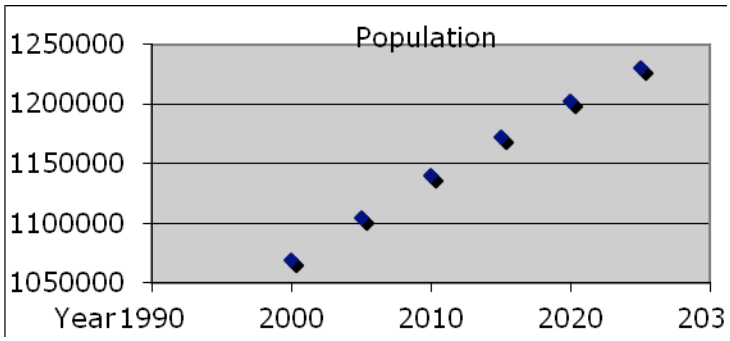
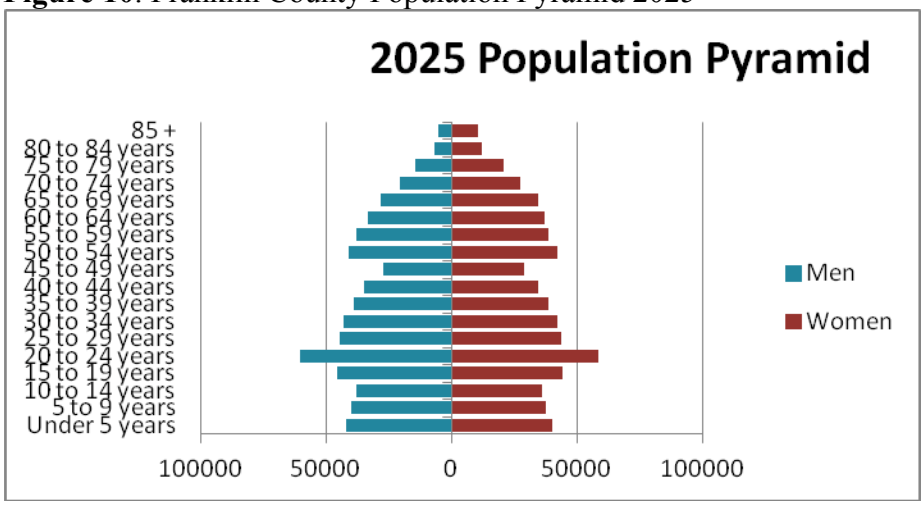


Figure 9: Population Projection

As indicated by the aggregate linear population forecast, Franklin County is expected to enjoy net positive growth of 15% between 2000 and 2025 (Figure 8). However, there are two issues with this population growth trend. One, it is an aging population. Compare Figure 10 to the original population pyramid in 2000 (Figure 1). It is clear that the aged population is growing at a faster rate than the working-age population that pays into services such as Social Security and Medicare.

Figure 10: Franklin County Population Pyramid 2025



The cohort component method provides insight as to why this trend is occurring. The only cohorts that experienced an overall decrease in population between 2000 and 2025 are adults aged 25 to 49 (Tables 10 and 11). Quite simply, Franklin County is losing its primary tax base which not only limits the services it can offer to dependent populations (children, the elderly, the poor, etc.) but hampers it natural growth. If this trend continues and Franklin County continues to lose adults in this age group, the county could very well experience a decrease in population as the aged of 2025 pass on and the children follow the trend and leave upon adulthood. It is therefore vital, that Franklin County work to attract and retain this population segment.

Table 10: Female Population Change

	Female Population		
	2000	2025	% Change
5 to 9 years	37793	37872	0
10 to 14 years	35456	36156	2
15 to 19 years	36792	44501	21
20 to 24 years	45882	58488	27
25 to 29 years	46934	44003	-6
30 to 34 years	43845	42024	-4
35 to 39 years	44223	38477	-13
40 to 44 years	43620	34582	-21
45 to 49 years	38413	28883	-25
50 to 54 years	33042	42354	28
55 to 59 years	23527	38854	65
60 to 64 years	18681	37217	99
65 to 69 years	16156	34350	113
70 to 74 years	15702	27446	75
75 to 79 years	13487	20941	55
80 to 84 years	9118	12138	33
85 +	8832	10413	18
Total	549695	628887	14

Table 11: Male Population Change

	Male Population		
	2000	2025	% Change
Under 5 years	39171	42039	7
5 to 9 years	39605	39701	0
10 to 14 years	37314	37984	2
15 to 19 years	37582	45651	21
20 to 24 years	45824	60247	31
25 to 29 years	47366	44328	-6
30 to 34 years	45110	42954	-5
35 to 39 years	43840	39169	-11
40 to 44 years	41126	34956	-15
45 to 49 years	35249	27328	-22
50 to 54 years	30083	40867	36
55 to 59 years	20338	37691	85
60 to 64 years	15664	33513	114
65 to 69 years	13291	28134	112
70 to 74 years	11582	20305	75
75 to 79 years	8428	14465	72
80 to 84 years	4802	7005	46
85 +	2908	5184	78
Total	519283	601520	16

V. Policy Implications

As the tax-base shrinks (residents of working age 25 – 49) and the rest of the population increases, Franklin County will experience a disconnect between the level of services needed and the funding available to provide them. This will have far-reaching implications for all residents in Franklin County. Franklin County must emphasize retaining this segment of the population by promoting job creation, providing incentives for living in the area such as tax breaks for the purchase of a new home and responding to the preferences of the demographic. This may include increased public transit services, recruiting quality teachers in schools, improving the walkablility of the municipalities and courting high paying jobs that employ a college-educated population.

Controversially, while there is a projected decline in the number of residents in their prime working ages in Franklin County, residents ages 50 and over are expected to increase in number. Policies for an aging population should be drafted and implemented. For instance, there is likely to be shift in the demand for housing stock as aging baby boomers downsize and move into smaller residences. In addition, an aging population is likely to require additional transportation services. Transportation policies should be revised to accommodate this demographic by expanding bus routes and increase the frequency of stops. The success of these policies is largely contingent on retaining the working population, as emphasized earlier.

VI. Conclusion

Franklin County is expected to have positive population growth into 2025. However, because the growth in population is largely among elderly residents, Franklin County must promote development that will attract working adults. Franklin County does a very good job in attracting college-aged residents thanks in large part to the Ohio State University, but should attempt to retain them after graduation. Further study might also wish to consider racial cohorts in a population analysis in order to know which areas and demographics are likely to be stressed for services moving forward.

Appendix A: Methodologies

1. Natural Growth

Natural growth is computed by placing birth and survival rates of age cohorts into a matrix (C) and multiplying the matrix by the population vector. Projecting for a population divided by gender, however, is more complicated. While the female population is a straightforward application of the natural growth matrix method, male population must be calculated using the following formula:

Natural Growth of Men = Bm x P0f + Sm x P0m

Where "Bm" is the birthrate of men
P0f is the original female population vector
Sm is the male survival rate
P0m is the original male population vector

Natural growth for males and females were calculated from the year 2000 to 2005. These results were subtracted from the Ohio Department of Development's population projections to determine the net migration. The net migration was then divided by ODOD's cohort projection and multiplied by five for the five-year migration rate.

2. Cohort component

The final cohort component matrix for population growth is the combination of natural growth variables with migration rates into a single matrix (D). As in the natural growth method, this matrix is then multiplied by the population vector 2000, then 2005 and so on. Also like the natural growth method, this process is complicated by separating male and female populations.

While calculating the population changes for women is a straightforward multiplication of matrix D to the population vectors, calculating the cohort-component growth of males requires the following formula:

P1m = Bm x P0f + (Sm + Mm)P0m

Where Bm = Birth rate of men
P0f = Vector of women
Sm = Survival rate of men
Mm = migration rate of men
P0m = Vector of men

This process is repeated for every time period, i.e. P2005m = Bm x P2000f + (Sm + Mm)P2000m, P2010m = Bm x P2005f + (Sm + Mm)P2005m, etc.

Appendix C: Population Prediction Results

Female Matrices

	Age	Population	F. Babies	Deaths	BR*5	DR*5	SR
1	Under 5 years	38192	0	79	0	0.010342	0.989658
2	5 to 9 years	37793	0	2	0	0.000265	0.999735
3	10 to 14 years	35456	16	5	0.002256	0.000705	0.999295
4	15 to 19 years	36792	914	10	0.124212	0.001359	0.998641
5	20 to 24 years	45882	2176	20	0.23713	0.00218	0.99782
6	25 to 29 years	46934	2407	24	0.256424	0.002557	0.997443
7	30 to 34 years	43845	1999	32	0.227962	0.003649	0.996351
8	35 to 39 years	44223	896	53	0.101305	0.005992	0.994008
9	40 to 44 years	43620	161	79	0.018455	0.009055	0.990945
10	45 to 49 years	38413	10	94	0.001302	0.012235	0.987765
11	50 to 54 years	33042	0	146	0	0.022093	0.977907
12	55 to 59 years	23527	0	148	0	0.031453	0.968547
13	60 to 64 years	18681	0	201	0	0.053798	0.946202
14	65 to 69 years	16156	0	295	0	0.091297	0.908703
15	70 to 74 years	15702	0	466	0	0.148389	0.851611
16	75 to 79	13487	0	611	0	0.226514	0.773486

	years						
17	80 to 84 years	9118	0	658	0	0.360825	0.639175
18	85 +	8832	0	1399	0	0.792006	0.207994

Female Migration

ODOD '05	2005	net	rate
39,430	42895	-3,465	-0.08788
38,130	37797	333	0.008733
37,720	37783	-63	-0.00167
42,750	35431	7,319	0.171205
45,960	36742	9,218	0.200566
35,480	45782	-10,302	-0.29036
45,570	46814	-1,244	-0.0273
43,090	43685	-595	-0.01381
43,610	43958	-348	-0.00798
42,820	43225	-405	-0.00946
37,420	37943	-523	-0.01398
31,650	32312	-662	-0.02092
21,930	22787	-857	-0.03908
17,020	17676	-656	-0.03854
14,360	14681	-321	-0.02235
13,330	13372	-42	-0.00315
10,740	10432	308	0.028678
9,230	7665	1,565	0.169556

Female Population Predictions

	2000	2005	2010	2015	2020	2025
Under 5 years	38,192	39538.79	36557.01	36282.68	37947.7	40189.28
5 to 9 years	37,793	38127.06	39462.84	36523.56	36226.4	37871.6
10 to 14 years	35,456	37723.78	38053.96	39388.84	36448.11	36155.94
15 to 19 years	36,792	41729.96	44841.55	45704.21	47185.84	44500.85
20 to 24 years	45,882	45944.36	50888.11	54987.02	56670.61	58487.9
25 to 29 years	46,934	32154.21	36507.9	40176.74	43201.42	44003.1
30 to 34 years	43,845	45617.09	30826.71	35573.03	39102.92	42023.51
35 to 39 years	44,223	43074.36	44855.84	30094.83	35027.66	38476.55
40 to 44 years	43,620	43609.92	42468.24	44248.16	29561.4	34581.86
45 to 49 years	38,413	42861.68	42809.62	41678.77	43453.26	28882.72
50 to 54 years	33,042	37481.19	41813.4	41701.42	40585.97	42354.35
55 to 59 years	23,527	31819.9	35987.56	40136.88	39940.59	38853.89

60 to 64 years	18,681	22056.97	29957.1	33684.94	37558.08	37216.6
65 to 69 years	16,156	17053.3	20213.06	27566.4	30810.27	34350.01
70 to 74 years	15,702	14330	15176.05	18028.42	24646.66	27446.43
75 to 79 years	13,487	13329.51	12161.59	12885.78	15312.61	20941.13
80 to 84 years	9,118	10693.48	10616.85	9711.284	10245.46	12137.9
85 +	8,832	9162.517	10294.31	10672.64	10236.66	10413.49

Male Matrices

	Population	M. Babies	Deaths	BR*5	DR*5	SR
Under 5 years	39171	0	85	0	0.01084986	**0.98915014**
5 to 9 years	39605	0	4	0	0.00050499	**0.99949501**
10 to 14 years	37314	24	8	**0.003384477**	0.00107198	**0.99892802**
15 to 19 years	37582	989	30	**0.134404218**	0.00399127	**0.99600873**
20 to 24 years	45824	2163	36	**0.235713352**	0.00392807	**0.99607193**
25 to 29 years	47366	2479	57	**0.26409426**	0.00601697	**0.99398303**
30 to 34 years	45110	2087	45	**0.237997491**	0.00498781	**0.99501219**
35 to 39 years	43840	950	84	**0.107410171**	0.00958029	**0.99041971**
40 to 44 years	41126	192	122	**0.022008253**	0.01483247	**0.98516753**
45 to 49 years	35249	7	155	**0.00091115**	0.02198644	**0.97801356**
50 to 54 years	30083	0	222	0	0.03689792	**0.96310208**

55 to 59 years	20338	0	228	0	0.05605271	**0.94394729**
60 to 64 years	15664	0	267	0	0.08522727	**0.91477273**
65 to 69 years	13291	0	375	0	0.14107291	**0.85892709**
70 to 74 years	11582	0	502	0	0.21671559	**0.78328441**
75 to 79 years	8428	0	525	0	0.31146179	**0.68853821**
80 to 84 years	4802	0	484	0	0.50395668	**0.49604332**
85 +	2908	0	546	0	0.93878955	**0.06121045**

Male Migration

	ODOD Projection	NG 2005	Net Migration	MR
Under 5 years	41,380	44455	-3,075	**-0.074311261**
5 to 9 years	39,160	38746	414	**0.010572012**
10 to 14 years	39,530	39585	-55	**-0.001391348**
15 to 19 years	43,900	37274	6,626	**0.150933941**
20 to 24 years	47,370	37432	9,938	**0.209795229**
25 to 29 years	35,190	45644	-10,454	**-0.297073032**
30 to 34 years	45,800	47081	-1,281	**-0.027969432**
35 to 39 years	44,060	44885	-825	**-0.018724467**
40 to 44 years	42,830	43420	-590	**-0.013775391**
45 to 49 years	40,060	40516	-456	**-0.011382926**
50 to 54 years	33,790	34474	-684	**-0.020242675**
55 to 59 years	28,200	28973	-773	**-0.027411348**

60 to 64 years	18,100	19198	-1,098	**-0.060662983**
65 to 69 years	13,460	14329	-869	**-0.064561664**
70 to 74 years	10,930	11416	-486	**-0.044464776**
75 to 79 years	8,880	9072	-192	**-0.021621622**
80 to 84 years	5,870	5803	67	**0.011413969**
85 +	4,120	2560	1,560	**0.378640777**

Male Projection

	2000	2005	2010	2015	2020	2025
Under 5 years	39171	41544.1536	38452.8081	38063.0548	39729.8405	42039.1385
5 to 9 years	39605	39164.7045	41507.4549	38474.4177	38056.8279	39701.1144
10 to 14 years	37314	39533.0832	39089.9226	41432.1065	38397.3421	37984.1856
15 to 19 years	37582	42946.3994	45972.7737	45986.8707	48328.6716	45650.6176
20 to 24 years	45824	47045.6566	52644.9429	56833.9417	57726.8144	60246.589
25 to 29 years	47366	31572.8388	37481.4189	41303.431	44340.5584	44327.6752
30 to 34 years	45110	45819.2989	30101.326	36413.9771	40036.431	42953.9661
35 to 39 years	43840	44064.1194	44765.6839	29112.9728	35687.2263	39168.5127
40 to 44 years	41126	42853.4733	43051.6489	43743.7623	28231.4746	34956.4327
45 to 49 years	35249	40114.7633	41761.2272	41937.7218	42617.5605	27327.6197
50 to 54 years	30083	33865.0396	38547.2634	40062.7468	40204.6835	40866.7017
55 to 59 years	20338	28415.508	31836.5829	36252.2661	37590.7915	37690.8002
60 to 64 years	15664	18247.775	25715.7773	28492.0604	32491.815	33512.6753
65 to 69 years	13291	13470.9109	15822.8625	22502.5414	24610.9582	28133.7018
70 to 74	11582	10901.009	11085.8194	13097.7568	18745.6537	20305.4975

years						
75 to 79 years	8428	8889.77297	8346.37903	8502.88726	10075.4225	14465.3313
80 to 84 years	4802	5857.80988	6187.8092	5817.42831	5920.96269	7004.895
85 +	2908	3661.08738	4516.06122	5055.81647	5109.50352	5184.47537

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