

**CHAPTER 8**

**DEMOGRAPHIC ANALYSIS**

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**SECTION 1**

**INTRODUCTION: OVERVIEW OF DEMOGRAPHICS**

Demographics, the statistical characteristics of the human population, are used in many professions including but not limited to government, safety forces, realtors, appraisers, financial institutions, food service, non-profit agencies, and retailers. Government entities, for example, use demographics to analyze trends in population and housing data in order to plan for city services and programs to benefit residents and businesses alike. Analyzing demographic trends can assist in determining if the market is under or over served relating to such issues as the availability of senior housing or specialized retail services.

A complete demographic analysis involves the quantifying of data, analyzing trends of that data, identifying particular needs, and then making projections. Therefore, the demographics found within this Master Plan will provide the base data necessary for the City to quantify and analyze trends in population, housing stock, age, race, occupations, income, and more. This information can then be used to pinpoint the needs of certain populations and make projections and decisions based on those needs.

The demographic data contained herein was gathered from various sources, including the United States Census Bureau, City of Solon Planning and Building Departments, Ohio Board of Education, Cuyahoga County Auditor, and previous city prepared plans.

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**SECTION 2**  
**POPULATION CHANGE**

**Solon and Cuyahoga County**

The City of Solon is located in the extreme southeast corner of Cuyahoga County. The area occupied by the City was once largely farmland but many factors contributed to steady population growth, which ultimately transformed the community from low density farmland to a thriving residential suburb. These include such factors as out-migration from the City of Cleveland and other communities, the creation of a strong industrial base which attracted businesses and residents alike, and a superior public school system.

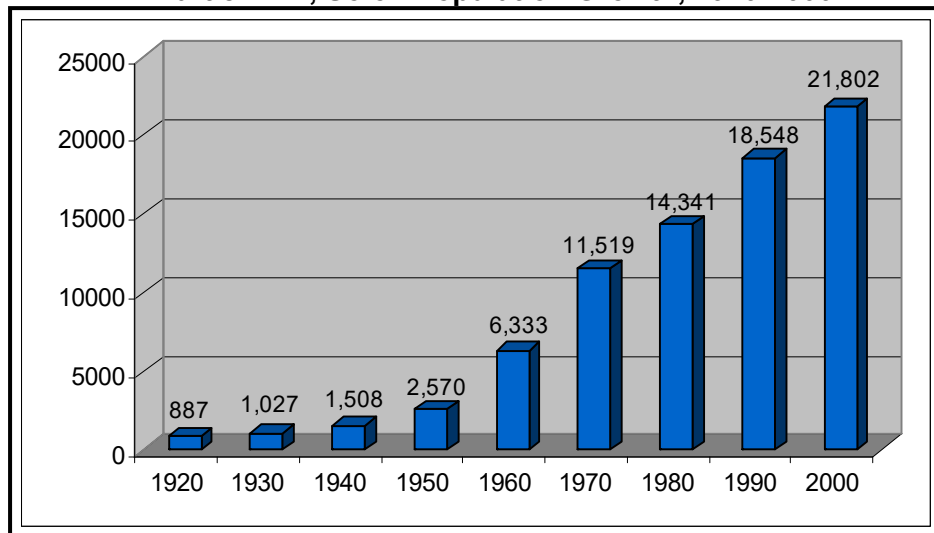
Solon has experienced consistent growth since the early 1900's as illustrated in "Table 8-2-A" and "Chart 8-2-A". The City has continued to grow and now has twenty-six times the population that it had in the early part of the 20<sup>th</sup> Century.

**"Table 8-2-A", Solon Population Growth and Growth Rates, 1920-2000**

Year	Population	# Increase	% Increase
1920	887	--	--
1930	1,027	140	15.7%
1940	1,508	481	46.8%
1950	2,570	1,062	70.4%
1960	6,333	3,763	146.4%
1970	11,519	5,186	81.8%
1980	14,341	2,822	24.4%
1990	18,548	4,207	29.3%
2000	21,802	3,254	17.5%

Source: U.S. Census Bureau

**"Chart 8-2-A", Solon Population Growth, 1920-2000**



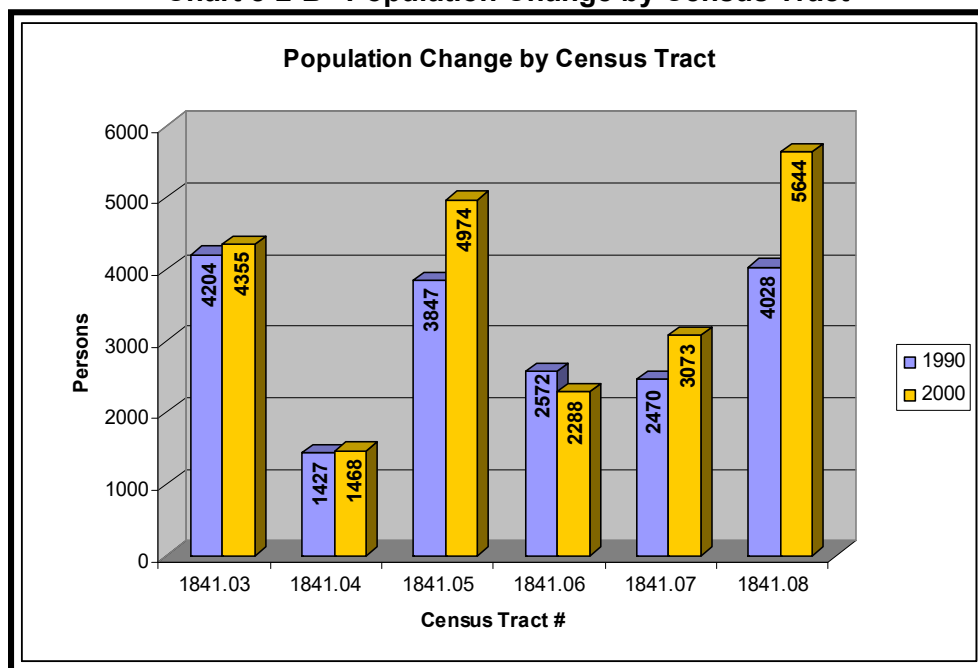
Source: U.S. Census Bureau

While the population significantly increased during the entire thirty years between 1950 and 1980, the 1950's marked the most notable increase. During this decade the population almost tripled in number from 2,570 in 1950 to 6,333 in 1960, a growth rate of 146%. This increase coincides with the Baby Boom that was experienced post World War II as well as the emerging trend of out migration from the City of Cleveland.

Substantial increases such as these were not atypical of suburban areas during this time period. However, a lesser, more controlled growth rate is preferable in order to properly manage population density. This was subsequently achieved by the City. It is in Solon's interests to continue to control and regulate its population growth rate and density in order to insure that the public infrastructure (roads, sewer and storm lines, etc.), and services (safety forces, refuse pick up, etc.) remain effective and reliable. It is equally important to regulate population growth in order to minimize potential negative impacts on the city school system, such as overcrowding and higher student to teacher ratios.

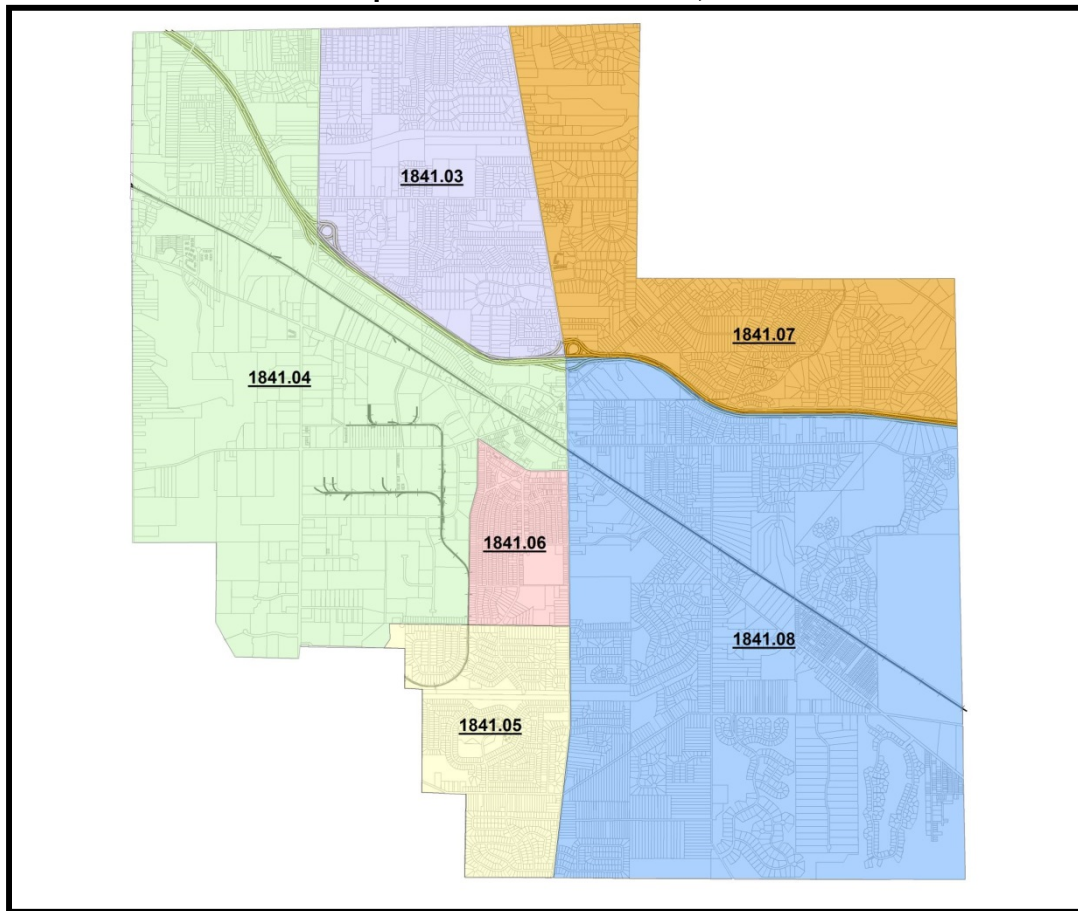
A review of the 1990 Census and 2000 Census shows that Census Tract 1841.08 located in the southeast part of the city experienced the greatest increase in population, growing from 4,028 persons in 1990 to 5,644 persons in 2000. This represents an increase of 40.1% and coincides with the development of several subdivisions in the area the largest being Thornbury, Signature of Solon, Signature of Solon at Sycamore Estates, and the Preserve. Census tracts 1841.05 and 1841.07 also experienced increases at 29.2% and 24.4%, respectively, while census tracts 1841.03 and 1841.04 had minimal increases at 3.5% and 2.8%, respectively. Census tract 1841.06 located near the center of the city was the only area that experienced a decrease in population, dropping from 2,572 in 1990 to 2,288 in 2000, a decrease of 11.0%. "Chart 8-2-B" illustrates these statistics and "Map 8-2-A" below portrays the specific location of each of the census tracts.

**"Chart 8-2-B" Population Change by Census Tract**



Source: U.S. Census Bureau

“Map 8-2-A” Census Tracts, 2000



Source: U.S. Census Bureau

Between 1990 and 2000 Solon averaged a positive 1.7% yearly growth rate while Cuyahoga County experienced a loss in population of 1.3% during the same time period. Of the fifty-nine communities in Cuyahoga County, thirty-seven (63%) experienced a net population loss while twenty-two (37%) gained population between 1990 and 2000.

From 1990 to 2000 Solon experienced a healthy growth rate of 17.5%. The City of Twinsburg, however, experienced the highest growth of any area community, increasing its population by 7,400 residents, or 77%, from 1990-2000. The City of Aurora followed with 47.5% and then Bentleyville Village with 40.5%. Chagrin Falls Township experienced the highest decrease in population of any area community at -33.1%. In terms of total population, Solon ranks 24<sup>th</sup> out of the thirty-eight cities located within Cuyahoga County.

### **Control of Population Growth**

Historically, Solon has used three planning tools to control growth:

- 1) Implementation of larger lot sizes (one acre and five acres);
- 2) Required consolidation of non-conforming lots; and
- 3) Public purchase of land for preservation.

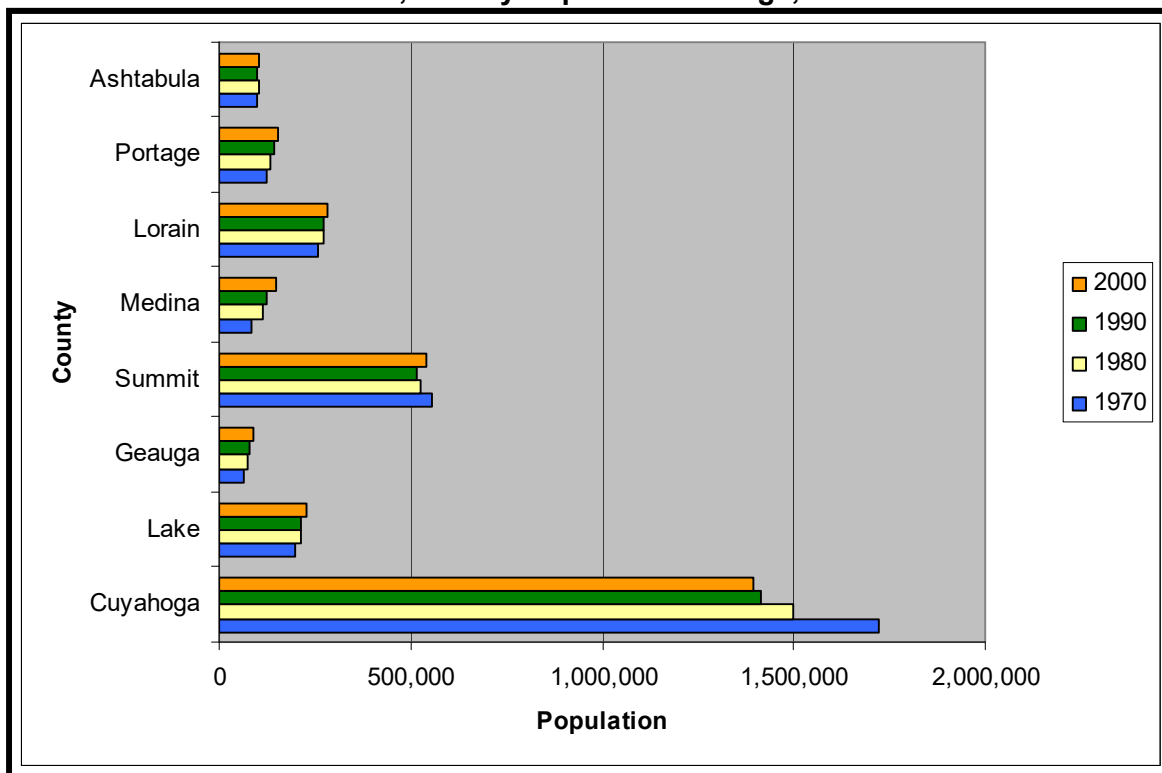
In addition, the adoption of the *Residential Growth Management Policy Statement* by City Council in May 2004 provided a specific framework of policies through which Solon’s build-out population could be managed, including policies on granting residential variances, expanding larger lot zoning, restricting smaller lot zoning, restricting two-family and multi-family zoning, restricting cluster housing, and public acquisition of open space. This *Policy* is located in the Appendix.

The 1975 Master Plan projected that Solon’s build out population would be 42,000 residents based upon the majority of residential land being zoned for 16,000 square feet lots. City officials and residents alike wisely recognized the need to limit population density in order to protect the overall quality of life, and proceeded to implement lower density zoning. To this end substantial re-zonings were approved by voters in the 1980’s and 1990’s that imposed larger lot sizes. This is just one example of how a city can proactively manage its land use pattern.

**Regional Population Comparison**

The phrase “urban sprawl” is generally used to describe a shift in population from the city core to suburban and rural areas. Many factors can contribute to sprawl including the transition from an industrially-based society to one more technologically based, blighted properties, lack of zoning regulations, and the desire of many residents to own more land. A population shift is apparent when comparing the eight counties that make up the Cleveland-Akron Consolidated Metropolitan Statistical Area (CMSA) which include Cuyahoga, Lake, Geauga, Summit, Medina, Lorain, Portage, and Ashtabula counties.

“Chart 8-2-C”, County Population Change, 1970-2000



Source: U.S. Census Bureau



“Chart 8-2-C” reflects the population change of the eight-county area between 1970 and 2000. Cuyahoga County and Summit County are the two most urban counties within the Cleveland-Akron CMSA and each, along with the core cities of Cleveland and Akron, experienced a net loss in population from 1970 to 2000 while the surrounding counties all experienced an increase.

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**SECTION 3**

**POPULATION PROJECTIONS AND  
MAXIMUM BUILD OUT POPULATION**

The United States experienced a general decrease in housing starts beginning in the mid-2000's, and Solon was no exception at the same time. Improper lending practices and adjustable rate mortgages combined to increase foreclosure rates nationwide. Therefore, the recent decrease in new housing does not suggest that Solon is no longer a desirable community in which to live. Rather it is indicative of a nationally depressed market combined with the fact that the City is nearing its maximum build out population. It is natural for a community's population growth to slow as maximum build out draws near. Typically, prime land is developed first followed by the development of land with more inherent difficulties (steep slopes, soil weakness, wetlands, etc.)

As discussed in Section 2, lot size requirements have a direct effect on a community's build out population. The likely trend in Solon will be for the population to continue to increase, but now through better managed growth, it is likely it will take place at a slower rate. Many other factors influence population and its distribution including the amount of land available for development, re-zonings to lesser or higher densities, divorces, retirement, capacity of the sanitary sewer system, access to sanitary sewers, in and out migration, and birth and death rates.

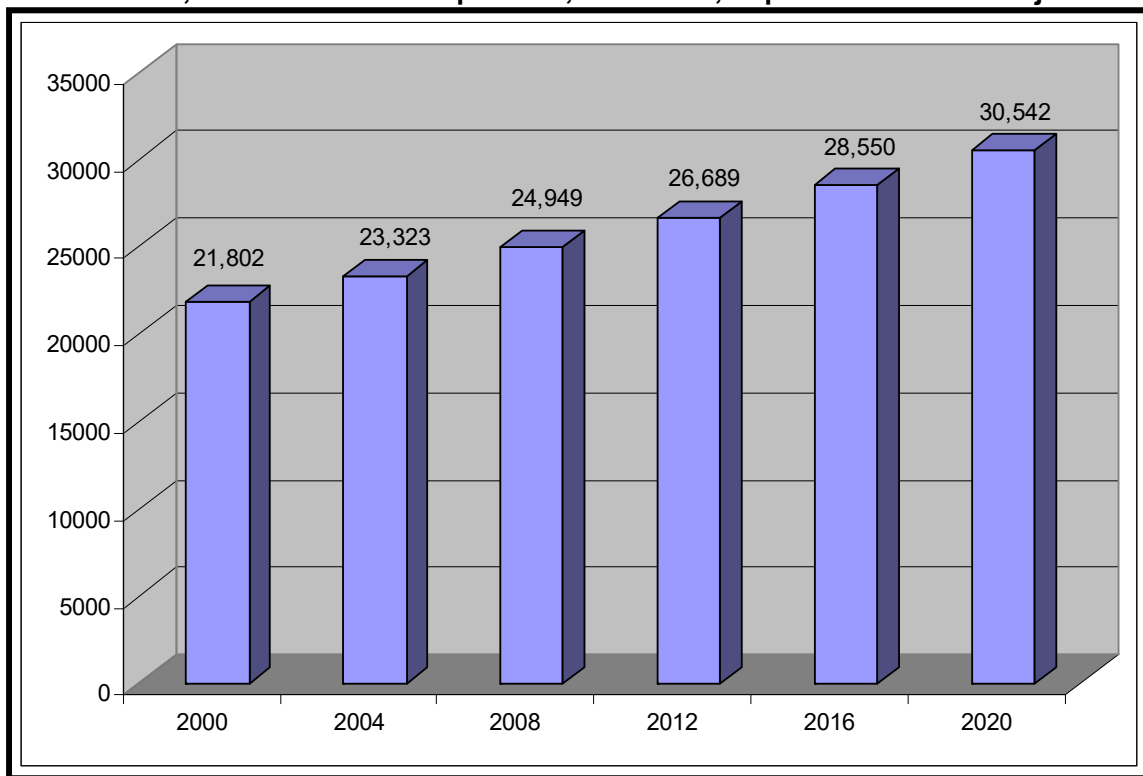
**Population Projections**

Population projections, which are estimates of future population, are calculated by the U.S. Census's Bureau based upon birth rates, death rates, and net international migration and they are provided at the state and national level. Population estimates differ from projections in that they are meant to provide an annual estimate of the present population.

In 2000, Ohio was the seventh most populated state in the union. Projections made by the U.S. Census Bureau for 2030 predict that Ohio will drop to the ninth most populated state. Other states such as North Carolina and Georgia are expected to increase their population at the intense rate of 51.9% and 46.8% respectively compared to Ohio's projected 1.7% increase. This growth rate is identical to Solon's increase in population experienced between 1990 and 2000.

If Solon's population was to continue to increase by 1.7% annually as it did from 1990 to 2000, by 2020 Solon's theoretical projected population would be approximately 30,542 as shown in "Chart 8-3-A". However, it should be noted that this number is likely to be unrealistic as it does not adequately account for the continual diminishing of buildable land as discussed above.

**“Chart 8-3-A”, Maximum Solon Population, 2000-2020, Exponential Based Projections**



Source: City of Solon Department of Planning & Economic Development

**Maximum Build-Out Population**

A more realistic measure of how many residents Solon may ultimately have is provided through a maximum build out population projection. Maximum build out population is a calculation used to project the absolute highest population that is likely to be supported based upon current zoning and land uses policies.

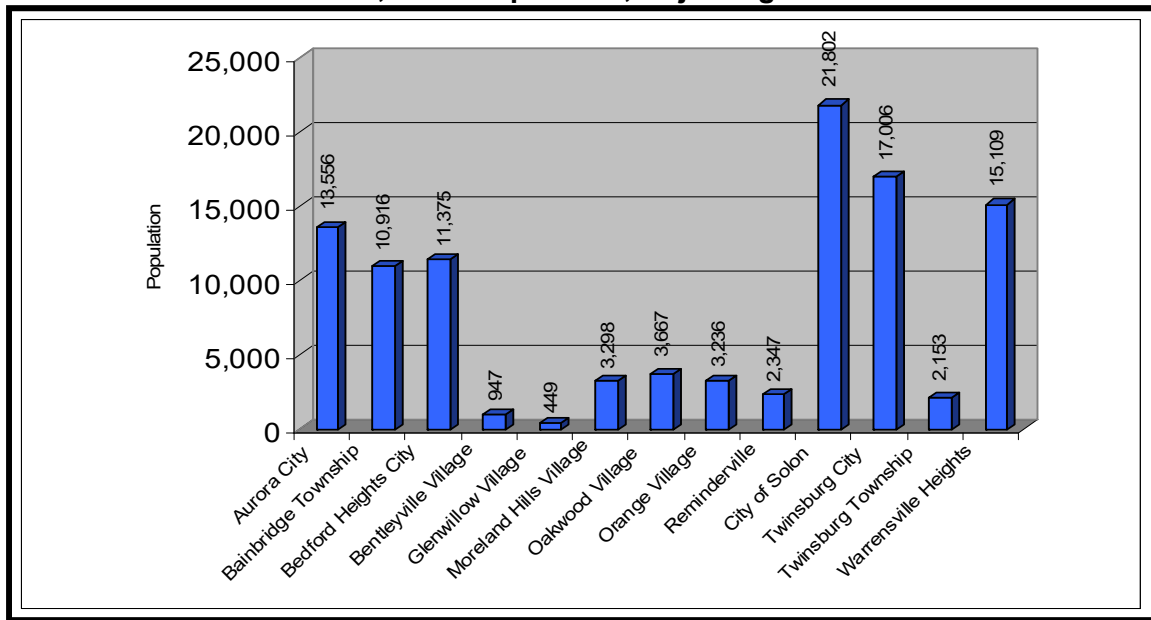
As of December 2009, the maximum build-out population for Solon is approximately 29,711 which is significantly lower in comparison to the previously projected 42,000 from the 1975 Master Plan, but only marginally lower than the aforementioned 30,542. The 30,542 total, however, is an exponential projection through the year 2020 while the 29,711 Maximum Build-Out Population would be the maximum population at any point in the future based upon current zoning and analysis of potentially buildable land. It is important to acknowledge that the existing water treatment facilities in the City have the capacity to serve a population of up to 26,400.

The methodology used to determine the projected 29,711 figure involved an inventory of all existing housing units, existing vacant residential lots of record as well as all potentially developable “backland areas” of parcels that were already built upon as of April 2009. Subsequently, this total was decreased by 20% as this is the typical amount of property that is later encumbered with infrastructure improvements (roads, utilities, etc.). This number was then multiplied by the 2.89 persons per household figure, as provided for Solon in the 2000 Census, to arrive at the final total.

**SECTION 4**  
**ADJOINING COMMUNITIES—A COMPARISON**

Solon is bordered by twelve communities (four cities, six villages, and two townships) located in the four counties of Cuyahoga, Geauga, Portage, and Summit. Solon ranks first in total population when compared to these twelve communities as demonstrated in “Chart 8-4-A”.

**“Chart 8-4-A”, Total Population, Adjoining Communities**



Source: US Census Bureau, 2000 Census

**Population Density and Geographic Area**

Solon is the fifth most densely populated of the twelve communities in question with a population density of 1,061 persons per square mile. Warrensville Heights is the most densely populated community with a density three times that of Solon, at 3,661 persons per square mile. See “Table 8-4-A” for statistics on other communities in the area. In addition “Chart 8-4-B” provides a comparison between population and housing unit densities in Solon, Cuyahoga County, and the twelve adjoining communities.

Compared to the thirty-eight cities located within Cuyahoga County, Solon’s population density is ranked 34<sup>th</sup> with only Brecksville, Independence, and Pepper Pike having a population density less than Solon.

In terms of geographic area, Solon is the 4<sup>th</sup> largest city in Cuyahoga County, totaling 20.59 square miles. Cleveland is the largest city at 82.4 square miles, Strongsville is second at 24.6 square miles, and North Royalton is third at 21.3 square miles.

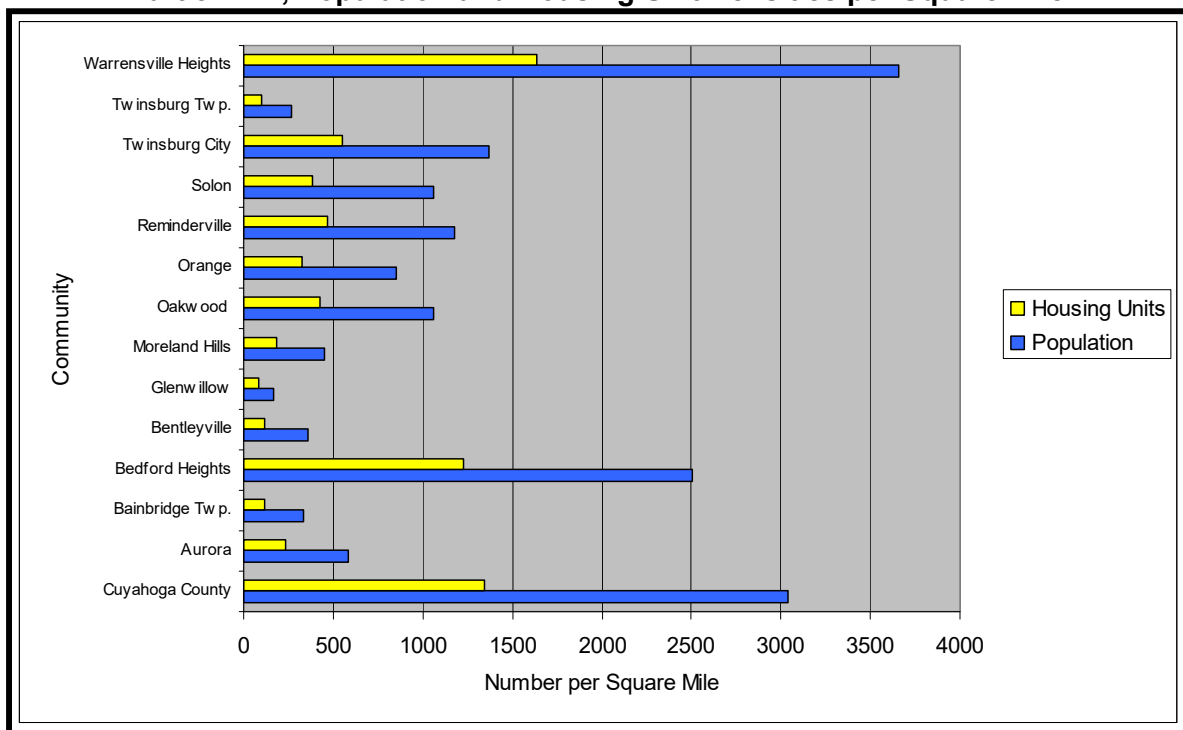
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**“Table 8-4-A”, Population Characteristics, Adjoining Communities**

Community Name	1990 Census	2000 Census	# Change, 1990-2000	% Change, 1990-2000	Total Area in Square Miles	Population Density per Square Mile, 2000 Census
Aurora City	9,192	13,556	4,364	47.5	24.1	584
Bainbridge Township	9,694	10,916	1,222	12.6	25.8	423
Bedford Heights City	12,131	11,375	-756	-6.2	4.54	2,507
Bentleyville Village	674	947	273	40.5	2.62	363
Glenwillow Village	455	449	-6	-1.3	2.72	165
Moreland Hills Village	3,354	3,298	-56	-1.7	7.25	455
Oakwood Village	3,392	3,667	275	8.1	3.46	1,060
Orange Village	2,810	3,236	426	15.2	3.8	851
Reminderville Village	2,163	2,347	184	8.5	2.02	1,178
<b>City of Solon</b>	<b>18,548</b>	<b>21,802</b>	<b>3,254</b>	<b>17.5</b>	<b>20.59</b>	<b>1,061</b>
Twinsburg City	9,606	17,006	7,400	77.0	12.48	1,367
Twinsburg Township	1,896	2,153	257	13.5	8.10	268
Warrensville Heights City	15,745	15,109	-636	-4.0	4.13	3,661

Source: US Census Bureau, 2000 Census

**“Chart 8-4-B”, Population and Housing Unit Densities per Square Mile**



Source: U.S. Census Bureau, 2000 Census

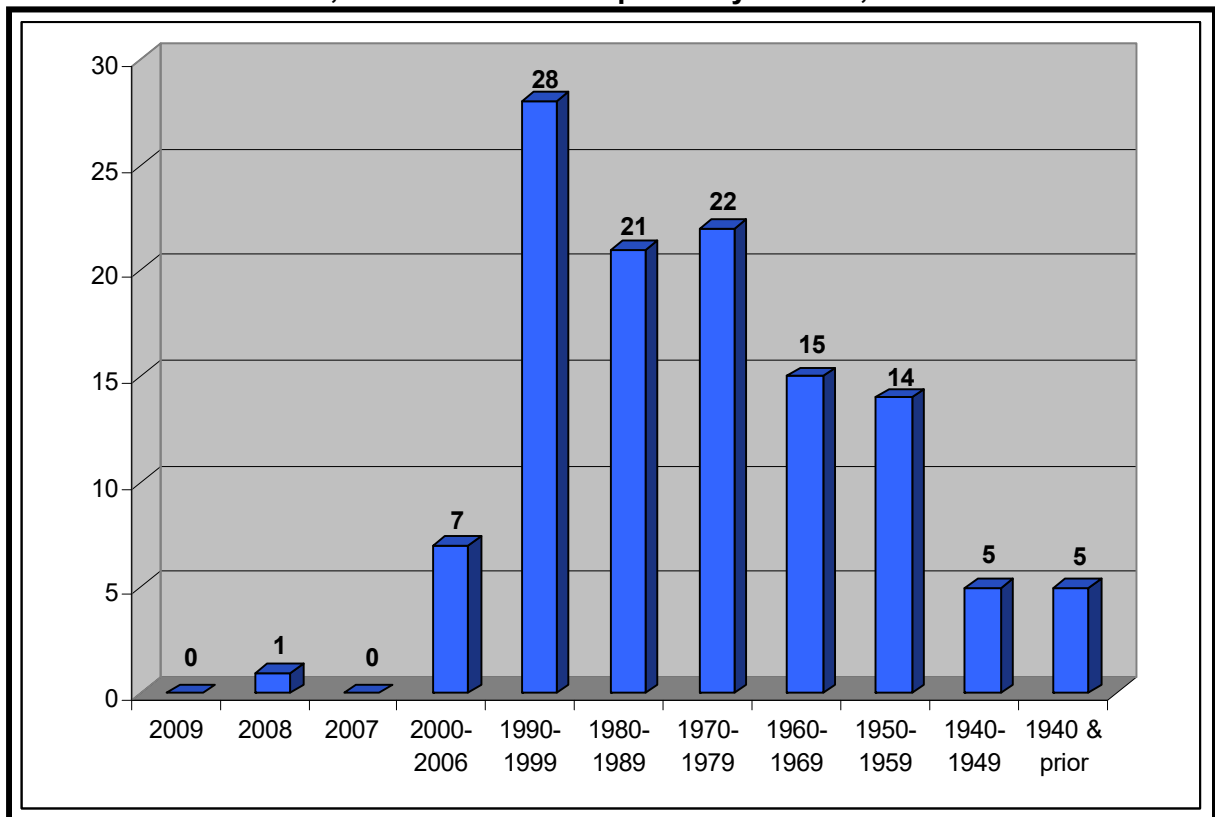
**SECTION 5**  
**SUBDIVISION DEVELOPMENT**

The development of approximately one hundred and seventeen subdivisions throughout the past one hundred years has fueled Solon’s substantial growth. Subdivision size naturally depends on the amount of land available and the relevant existing zoning classification, which specifies the permitted density. Subdivision may contain as few as five lots while others may range from 150 to 600 lots.

The majority (71%) of the subdivisions in Solon were platted between 1970 and 1999. In more recent years, one nine lot subdivision was approved in 2008 and has been constructed and one twenty-two lot subdivision was approved in 2007 but to date has not been constructed. No major subdivisions were proposed in 2009.

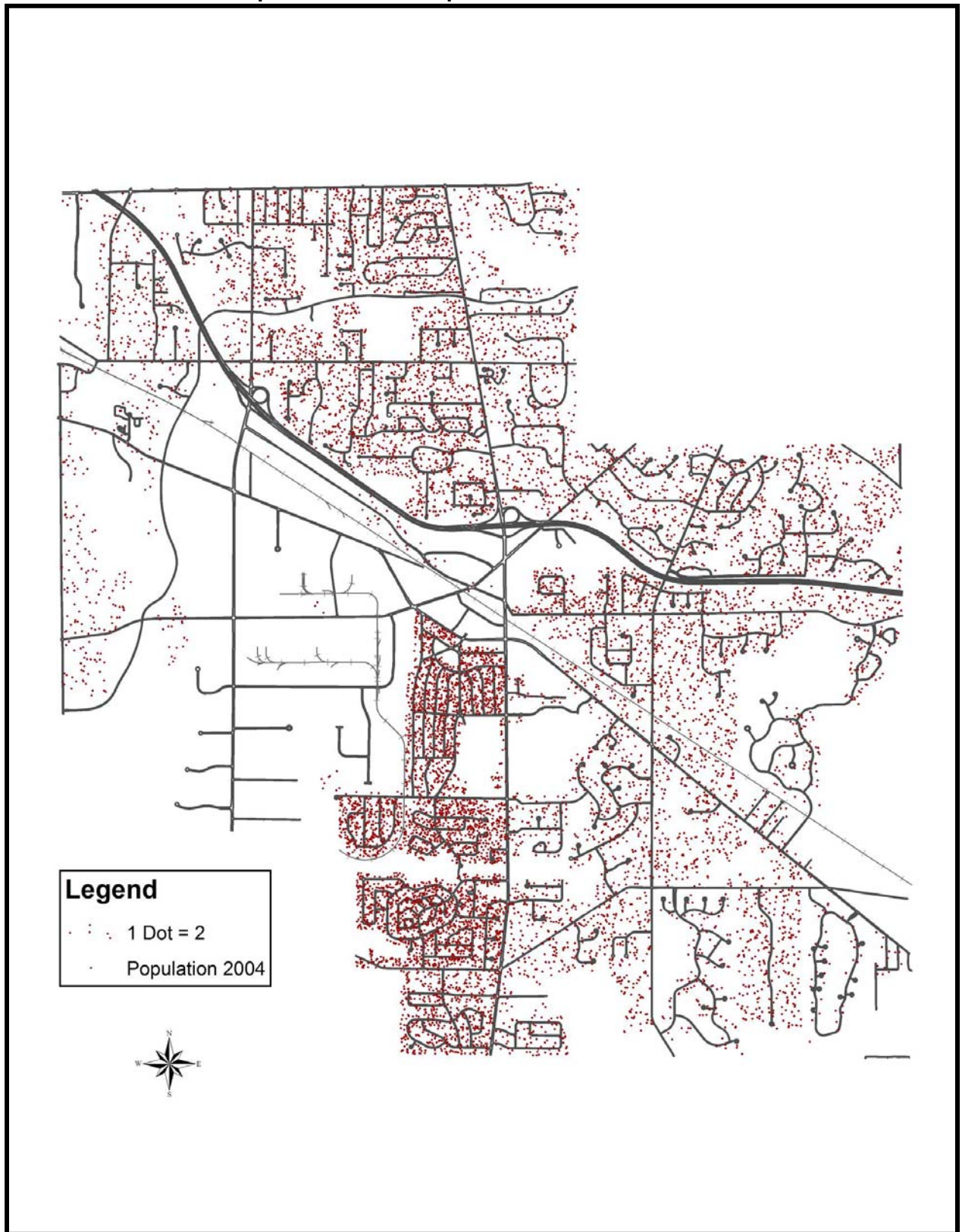
“Chart 8-5-A” illustrates the pace of subdivision development in Solon over the past one hundred years while “Map 8-5-A” depicts the population density distribution as of the 2000 Census.

**“Chart 8-5-A”, Subdivision Development by Decade, 1910-2009**



Source: City of Solon Department of Planning & Economic Development

“Map 8-5-A” Solon Population Distribution



Note: Method used to create this map was the combination U.S. Census Bureau Block Groups 2004 population estimates with the City of Solon residential land use layers to generate dot density areas.

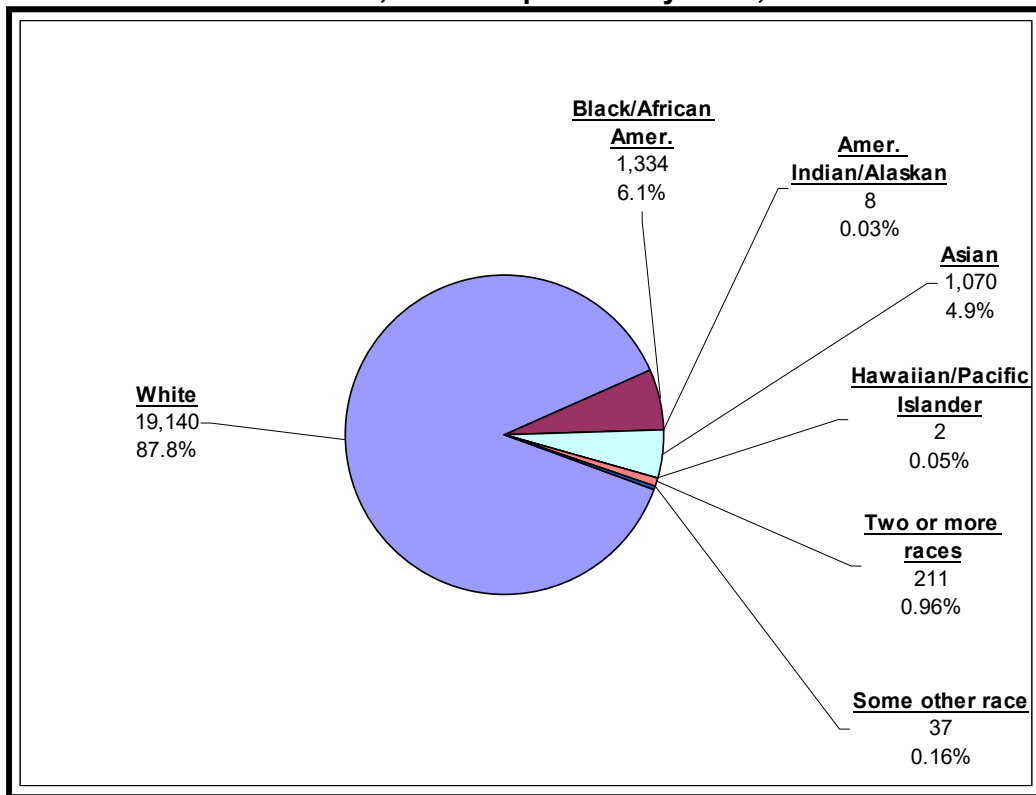


**SECTION 6**  
**RACIAL COMPOSITION**

The United States Census Bureau identified seven race categories for the 2000 Census as follows: White, Black or African American, American India/Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, some other race alone, or two or more races. As the race categories were broadened between the 1990 and 2000 censuses, a direct comparison is not possible as the 2000 categories allowed respondents who are more than one race to identify each race. People of Hispanic or Latino ethnicity can be of any race.

Solon in general has become more integrated since 1990 with the Black/African American and Asian populations more than doubling during that period. Solon also has the highest Asian population at 4.9% of the twelve adjacent communities. Approximately 2.3% of Solon’s population reported being Hispanic or Latino in origin.

**“Chart 8-6-A”, Solon Population by Race, 2000**



Source: U.S. Census Bureau, 2000 Census

“Chart 8-6-A” above provides racial population data for Solon based on the 2000 Census, the percentages of which are 87.8% White, 6.1% Black/African American, 0.03% American Indian/Alaskan, 4.9% Asian, 0.05% Hawaiian/Pacific Islander, 0.16% some

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other race, and 0.96% two or more races. For comparison Cuyahoga County percentages were 67.5% White, 27.5% Black/African American, with American Indian/Alaskan, Asian, Hawaiian/Pacific Islander, some other race, and two or more races making up the remaining 5%.

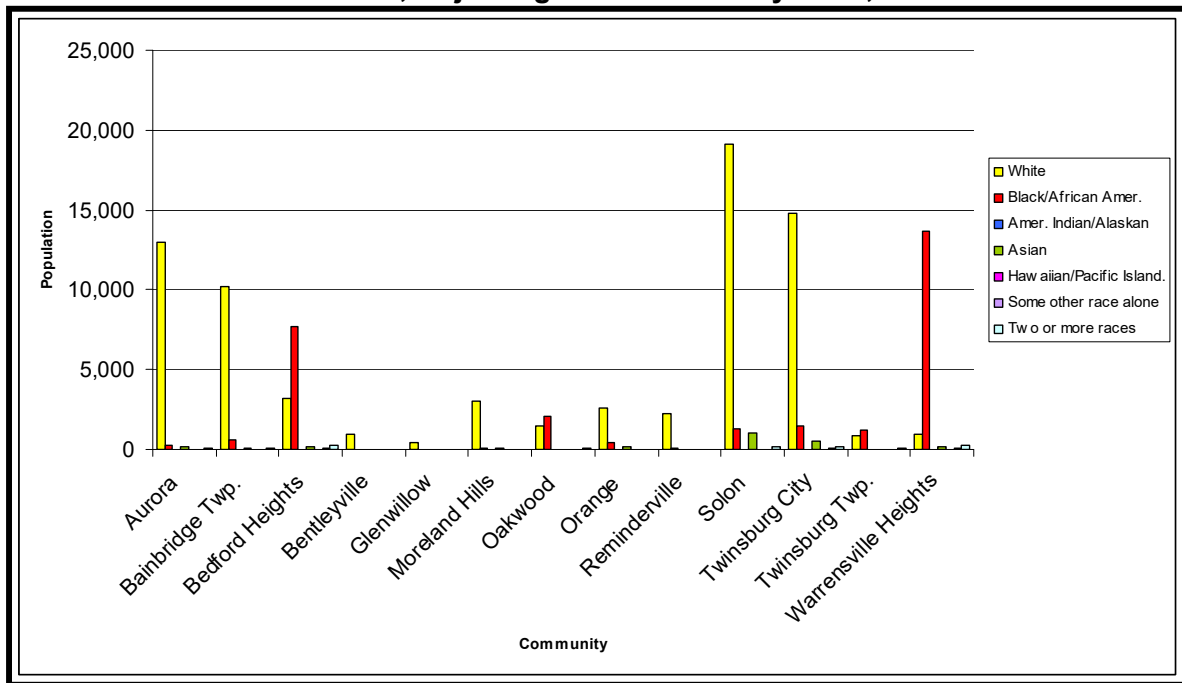
“Table 8-6-A” and “Chart 8-6-B” provide additional information on race data for adjoining communities and Cuyahoga County.

**“Table 8-6-A”, Adjoining Communities by Race, 2000**

Community	Total Population	White	Black/African American	American Indian/Alaskan	Asian	Hawaiian/Pacific Islander	Some other race	Two or more races
Aurora City	13,556	12,969	293	14	168	2	17	93
Bainbridge Twp.	10,916	10,165	564	4	49	2	26	106
Bedford Heights	11,375	3,173	7,669	23	216	1	61	232
Bentleyville	947	920	8	0	17	0	0	2
Glenwillow	449	425	19	0	0	0	0	5
Moreland Hills	3,298	3,067	100	1	107	0	3	20
Oakwood	3,667	1,491	2,062	7	13	1	26	67
Orange	3,236	2,636	409	2	136	3	8	42
Reminderville	2,347	2,223	65	0	16	1	6	36
<b>Solon</b>	<b>21,802</b>	<b>19,140</b>	<b>1,334</b>	<b>8</b>	<b>1,070</b>	<b>2</b>	<b>37</b>	<b>211</b>
Twinsburg City	17,006	14,783	1,484	19	502	2	53	163
Twinsburg Twp.	2,153	882	1,197	3	13	0	7	51
Warrensville Hgts	15,109	993	13,660	26	138	6	48	238
Cuyahoga Cnty.	1,393,978	938,863	382,634	2,529	25,245	338	20,962	23,407

Source: U.S. Census Bureau, 2000 Census

**“Chart 8-6-B”, Adjoining Communities by Race, 2000**



Source: U.S. Census Bureau, 2000 Census

**SECTION 7**

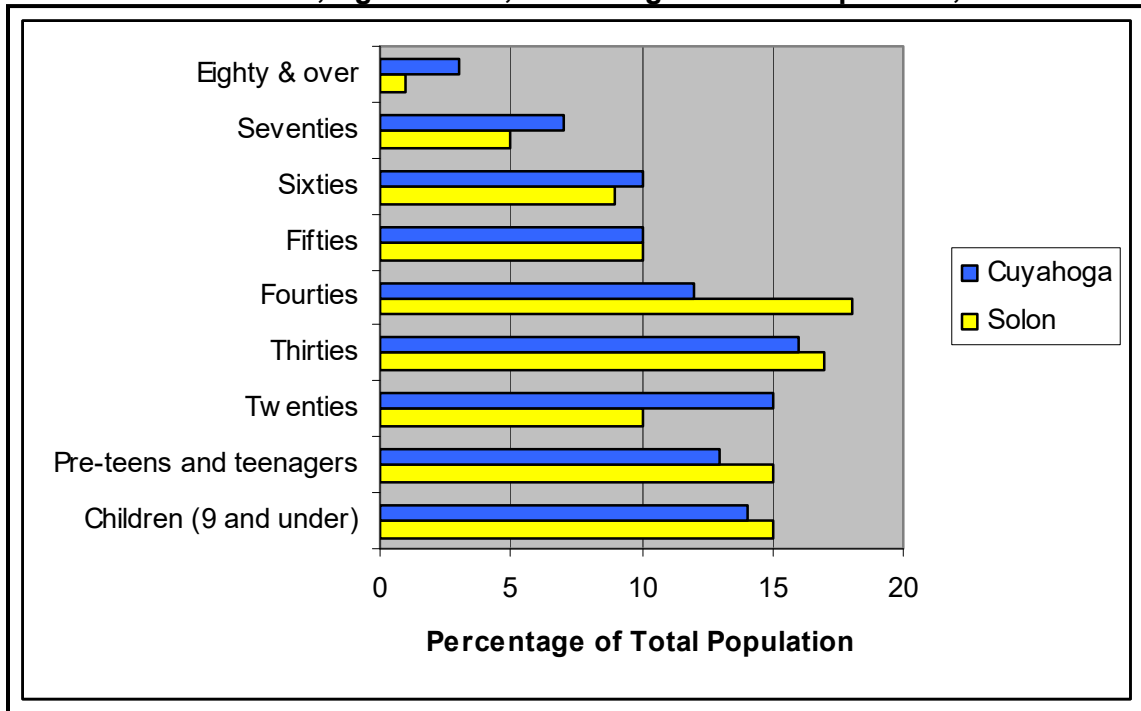
**AGE and GENDER COMPOSITION**

While analyzing Solon’s total population and its growth over time is important, analyzing the age related data of city residents is important as well as this data assists in determining whether particular needs are being met such as senior housing, education, and recreational opportunities.

**Age by Percentage of Total Population**

“Chart 8-7-A” illustrates the general population by “age bracket” (children, teens, adults, etc.) and “Table 8-7-A” provides a breakdown comparison by “age group” (40-44, 45-49, etc.) for Solon and Cuyahoga County based on the 1990 and 2000 censuses. Of the twelve adjacent communities and Solon, statistics reveal that residents 85 years and over comprised the lowest total percentage of population in nine out of the thirteen communities while residents 40 to 44 years old accounted for the highest total percentage of population in five out of the thirteen.

**“Chart 8-7-A”, Age Bracket, Percentage of Total Population, 2000**



Source: U.S. Census Bureau

From 1990 to 2000, Solon residents between the ages of 40-44 years comprised the highest percentage of the total population, 10.6% and 10.5% respectively. Residents 85 years and over comprised the lowest percentage of the total population with 0.5% and

0.9% respectively, but this same age group experienced the highest growth rate which is described in the following section. Persons 65 and over comprised approximately 10% of Solon’s population.

**“Table 8-7-A”, Age Comparison: Solon and Cuyahoga County**

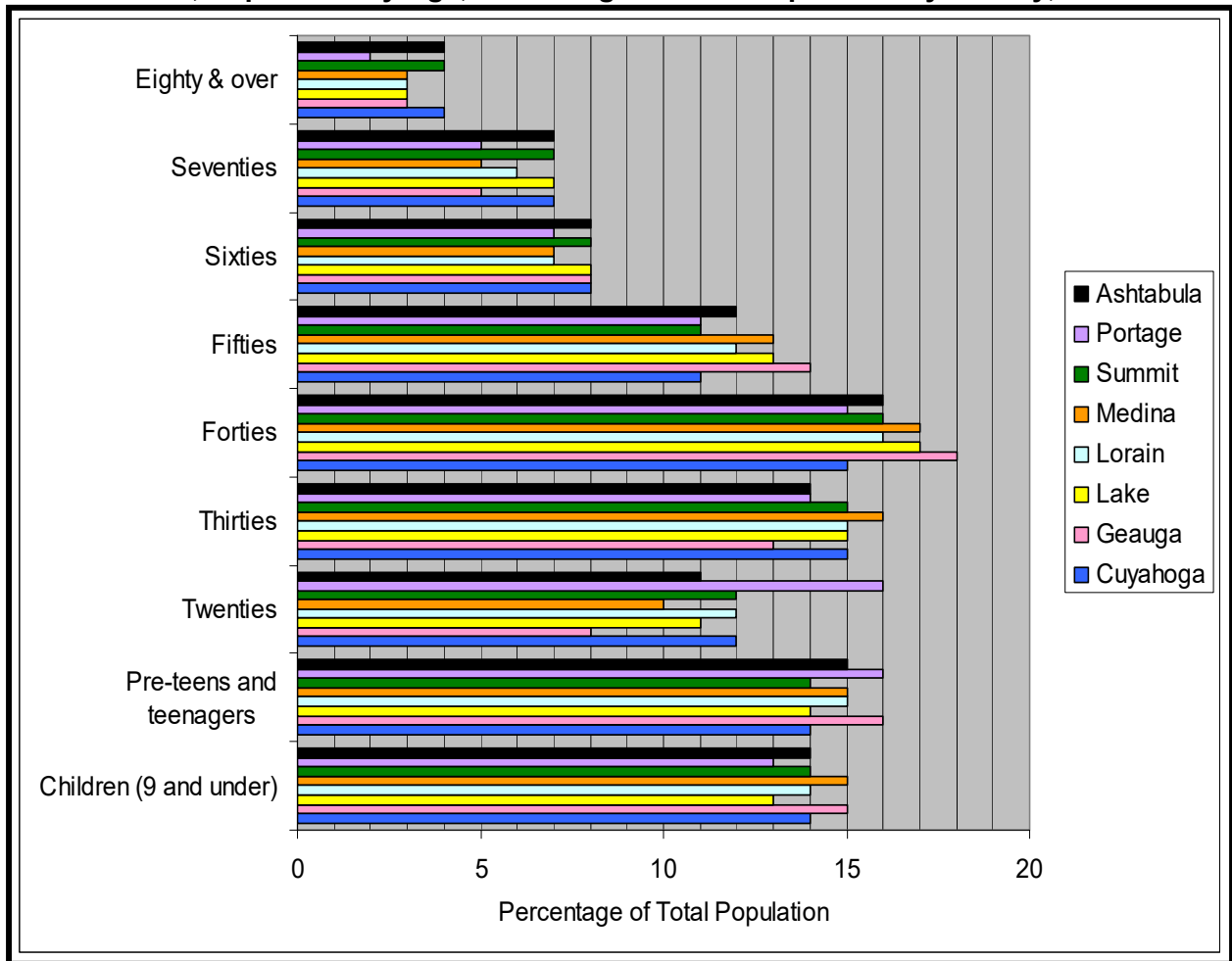
Age Group	1990 Census				2000 Census			
	Solon		Cuyahoga County		Solon		Cuyahoga County	
	Total Population by Age Group	% of Total Population by Age Group	Total Population by Age Group	% of Total Population by Age Group	Total Population by Age Group	% of Total Population by Age Group	Total Population by Age Group	% of Total Population by Age Group
Under 5	1,284	7.0%	100,293	7.1%	1,290	5.9%	90,996	6.5%
5 to 9	1,537	8.3%	95,303	6.7%	1,891	8.7%	101,372	7.3%
10 to 14	1,487	8.0%	89,843	6.4%	2,199	10.1%	99,235	7.1%
15 to 19	1,273	6.9%	90,162	6.4%	1,702	7.9%	89,960	6.5%
20 to 24	900	4.9%	94,679	6.7%	647	3.0%	77,515	5.6%
25 to 29	919	5.0%	115,952	8.2%	615	2.8%	91,182	6.5%
30 to 34	1,383	7.5%	122,088	8.6%	1,053	4.8%	97,691	7.0%
35 to 39	1,806	9.7%	108,690	7.7%	1,711	7.8%	106,932	7.7%
40 to 44	1,973	10.6%	94,916	6.7%	2,289	10.5%	112,517	8.1%
45 to 49	1,370	7.4%	74,665	5.3%	2,250	10.3%	100,967	7.2%
50 to 54	988	5.3%	66,287	4.7%	1,877	8.6%	86,634	6.2%
55 to 59	863	4.6%	65,801	4.7%	1,141	5.2%	65,599	4.7%
60 to 64	881	4.7%	72,395	5.1%	818	3.7%	56,217	4.0%
65 to 69	757	4.1%	72,441	5.1%	660	3.0%	52,733	3.8%
70 to 74	533	2.8%	58,066	4.1%	642	3.0%	54,594	3.9%
75 to 79	335	1.8%	43,743	3.1%	513	2.4%	48,908	3.5%
80 to 84	166	0.9%	26,306	1.9%	311	1.4%	33,561	2.4%
85 - over	93	0.5%	20,510	1.5%	193	0.9%	27,365	2.0%
	<b>18,548</b>	<b>100.0%</b>	<b>1,412,140</b>	<b>100.0%</b>	<b>21,802</b>	<b>100.0%</b>	<b>1,393,978</b>	<b>100.0%</b>

Source: U.S. Census Bureau

Out of the eighteen age groups that were studied, Solon gained population in twelve and lost population in six while Cuyahoga County gained population in eight and lost in ten.

Taking a broader look at the eight county region of Cuyahoga, Geauga, Lake, Lorain, Medina, Summit, Portage, and Ashtabula, statistics reveal that, in general, the various age brackets have very similar percentage totals with people in their forties comprising the highest percentage of population while those persons eighty and over made up the lowest. Twenty-year-olds saw the most variability as shown in “Chart 8-7-B”.

“Chart 8-7-B”, Population by Age, Percentage of Total Population by County, 2000



Source: U.S. Census Bureau

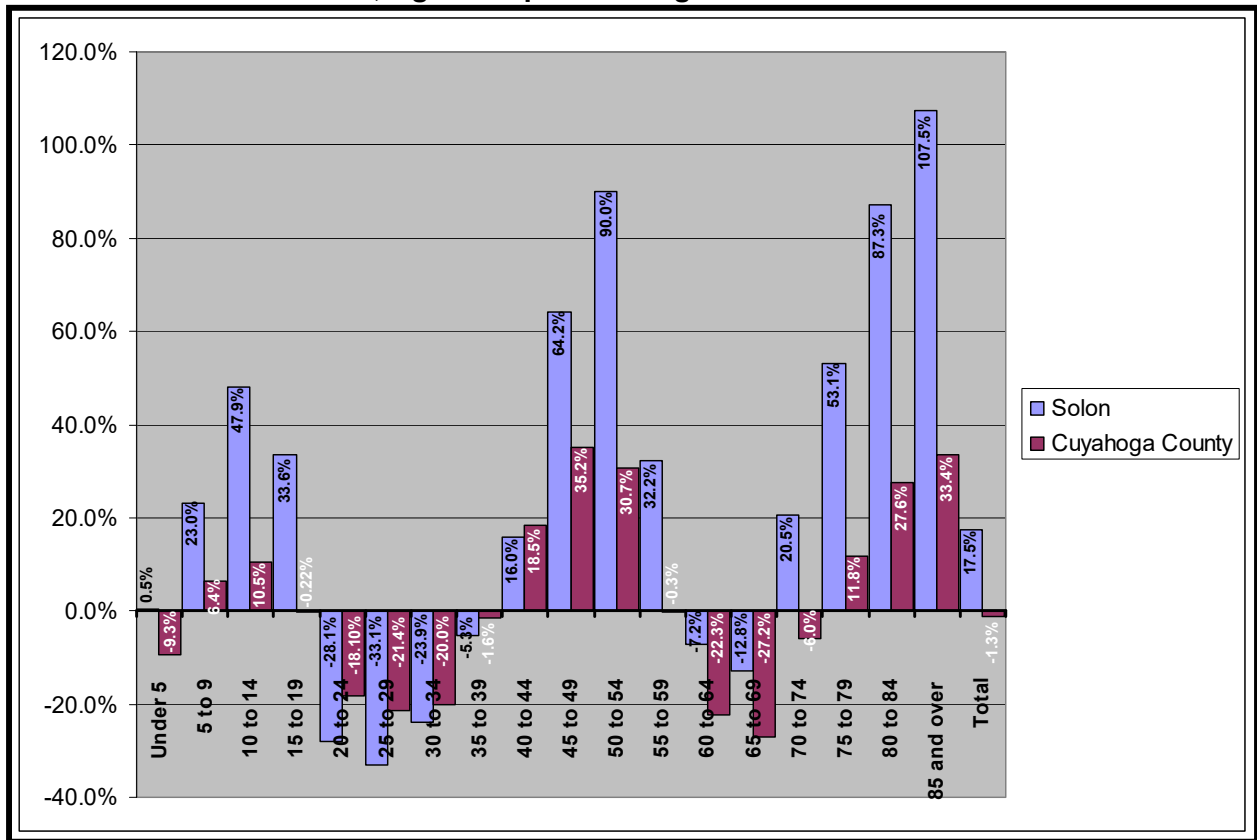
**Age by Percentage Increase and Decrease**

Fluctuation over time in the total population of each age group is expected due to several social and economic factors such as birth and death rates, re-location of college students, cost of living expenses, and job availability. The three age groups with the highest rate of increase in Solon between 1990 and 2000 were those 85 years and over (+107.5%), 50-54 years (+90%), and 80-84 years (+87.3%). Conversely, the three age groups with the highest rate of decrease were 25-29 years (-33.1%), 20-24 years (-28.1%) and 30-34 (-23.9%).

“Chart 8-7-C” illustrates the percentage increase and decrease for each respective age group for Solon and Cuyahoga County.

Obviously, these numbers indicate the senior population is increasing which can be attributed to many factors including healthier lifestyles, advances in medical care, and Solon’s commitment to providing high quality senior services. The decrease in 20-34 year-olds may largely be due to the fact that many young adults relocate to other cities and states after obtaining a college degree as well as cost of living factors.

“Chart 8-7-C”, Age Group Percentage Increase/Decrease



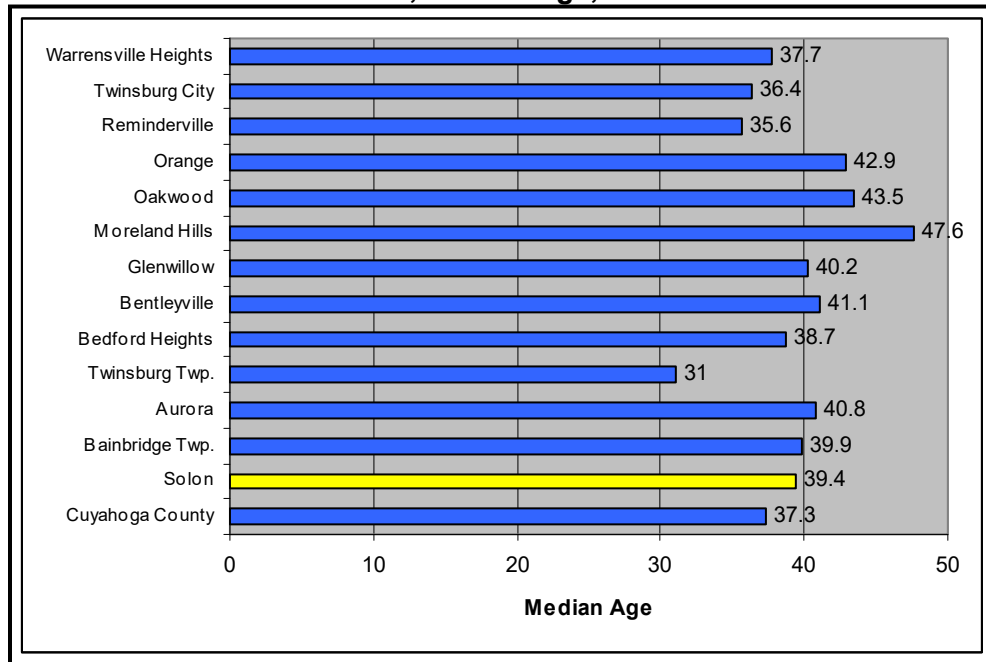
Source: U.S. Census Bureau

**Median Age**

Solon’s median age of 39.4 years is slightly higher than Cuyahoga County’s 37.3 years. Seven of the communities adjacent to Solon have a median age less than Solon’s while the six others have a higher median age. Moreland Hills has the highest median age of all at 47.6 while Twinsburg Township has the lowest at 31 years. “Chart 8-7-D” provides additional detail on median age.

After World War II ended the population surge of the “Baby Boom” began. This period lasted generally from the mid-1940’s through the mid-1960’s, and the effects of this increase in birth rates have begun to be manifested in the general aging of the population, with many of the “baby boomers” turning 60 years old in 2005. By 2010, and continually through 2025, the rest of the baby boomers will reach retirement age. This change will have effects on housing, senior services, health care, transportation needs, among others.

“Chart 8-7-D”, Median Age, 2000 Census



Source: U.S. Census Bureau

**Gender**

There are 10,687 (49%) males and 11,115 (51%) females in Solon according to the 2000 Census. Comparatively, Cuyahoga County is 47% male and 53% female. Of the adjacent communities, two have a higher male population but only by a small margin. These are as follows: Bentleyville (51%) and Glenwillow (52%).

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**SECTION 8**

**SUMMARY**

Over the past one hundred years Solon dramatically grew from a rural farming town to become a strong, diverse community experiencing its highest growth rate between 1950 and 1960. It is expected that future population increases will be more modest than in past decades but managing the city's growth will remain a priority.

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