



IMAGINE POLK CITY

- A Bridge to the Future

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Population Trends and Projections

In order to plan for the future needs of Polk City residents, it is important to define the demographics and anticipated trends over time. Forecasting population predicts growth based on current trends and can heavily impact decisions regarding future land use, housing and various infrastructure projects. This helps us understand where current policies might lead us to determine whether they are leading us in the direction we want to go. This section examines numerous alternatives to project the population in year 2035 based on Polk City's experienced growth since 1990.

Historical Trends

Historically, Polk City did not begin to see significant growth until the 1960's. The population remained steady between 300-400 until an increase of 68.7% in the 1960's brought the population up to 567. At this time, plans for the Saylorville Reservoir were submitted. The construction of the dam to create both Saylorville Lake and Big Creek Lake surrounding the community ultimately changed the community's growth pattern. During the 1980's, Polk City more than doubled in size, increasing to 1,658 residents. As of 2010 census, the population was 3,418; indicating growth of 45.8% since 2000. It is anticipated to see this growth increase over the next 25 years.

Despite experiencing 192% growth between 1960 and 1980, Polk City tracked slower growth than its metro counterparts; compared to Johnston at 1,038% growth, Pleasant Hill at 780%, Clive at 706% and Ankeny at 421%. It is important to note, however, that several of those metro communities (Clive, Johnston and Pleasant Hill) were not incorporated until the late 1950's or 1960's, skewing the data during the first few years of incorporation.

From 1980-2000, Polk City was much more consistent, though still grew at a slower rate compared to other cities within the metro. Johnston saw the largest increase of 242%, followed by Waukee (130%) and Clive (112%). Polk City's growth of 41% was similar to the growth of communities such as Pleasant Hill and Urbandale. Since then, Polk City has increased its share of the metro and outpaced other metro communities. With a 46% percent change between 2000-2010, Polk City reflected a larger growth rate than Altoona (41%), Urbandale (36%) and Clive (20%). Table 1 below illustrates the growth comparison described.

Table 1: Total Population Percent Change: Metro Comparison

| | 1960 | 1970 | 1980 | 1990 | 2000 | 2010 | % Change 1960-1980 | % Change 1980-2000 | % Change 2000-2010 |
|------------------|---------|---------|---------|---------|---------|---------|-----------------------|-----------------------|-----------------------|
| Polk City | 567 | 715 | 1,658 | 1,908 | 2,344 | 3,418 | 192% | 41% | 46% |
| Ankeny | 2,964 | 9,151 | 15,429 | 18,482 | 27,117 | 45,582 | 421% | 76% | 68% |
| Altoona | 1,458 | 2,883 | 5,764 | 7,242 | 10,345 | 14,541 | 295% | 79% | 41% |
| Clive | 752 | 3,005 | 6,064 | 7,462 | 12,855 | 15,447 | 706% | 112% | 20% |
| Waukee | 687 | 1,577 | 2,227 | 2,512 | 5,126 | 13,790 | 224% | 130% | 169% |
| Johnston | N/A | 222 | 2,526 | 4,702 | 8,649 | 17,278 | 1038% | 242% | 100% |
| Urbandale | 5,821 | 14,434 | 17,869 | 23,500 | 29,072 | 39,463 | 210% | 63% | 36% |
| Pleasant Hill | 397 | 1,535 | 3,493 | 3,671 | 5,070 | 8,785 | 780% | 45% | 73% |
| Polk County | 266,315 | 286,101 | 303,170 | 327,140 | 374,601 | 430,640 | 14% | 24% | 15% |

With the increased growth of Polk City, decision makers will need to analyze the population change at a deeper level. By evaluating movements amongst age cohorts, officials can determine what type of infrastructure to invest in for the future. For example, with an increase in younger population, development efforts may be focused on school and recreational infrastructure. On the contrary, older populations would indicate funding efforts on health care and affordable living.

In 2000, the median age of Polk City was 34.1 years. That number has stayed relatively consistent as the 2010 median age was 34.4 years. It is important to look further into the specific age cohorts to determine which age groups are growing, and at what rate. Table 2 below illustrates the percent change and absolute change from 2000-2010 amongst 20 year age cohorts. School-aged children less than 19 years old saw the biggest absolute jump in population of 377 people, resulting in 52% growth. Ages 60 years and over saw the largest percentage increase of 58%, a total of 158 additional residents. Residents aged between 20-39 years increased by 38% and ages 40-59 years increased by 42%.

Figure 2: Population Change 2000-2010: Age Cohorts

| Age Group | 2000 | 2010 | % Change | Absolute Change |
|-------------------|------|------|----------|-----------------|
| Under 5 years | 195 | 328 | 68% | 133 |
| 5-9 years | 177 | 327 | 84% | 150 |
| 10-14 years | 182 | 251 | 37% | 69 |
| Under 19 years | 726 | 1103 | 52% | 377 |
| 20-39 years | 683 | 943 | 38% | 260 |
| 40-59 years | 662 | 942 | 42% | 280 |
| 60 years and over | 273 | 431 | 58% | 158 |

To further illustrate the movement in populations, the population pyramids displayed in Figures 1 and 2 below show the comparison of population change from 2000-2010 in five year cohorts.

The main populations worth noting include residents under the age of 5 which increased approximately 68.2 percent, ages 5-9 increased at a rate of 84.7 percent and ages 10-14 increased by 37.0 percent. This analysis is also shown in Figure 2. In 2010, approximately 32% of the population was school aged residents under the age of 19 years old compared to 30% in 2000. This increase is projected to continue amongst the younger school aged population due to the current development trends, and to meet future development goals. Therefore, these trends will need to be addressed moving forward when making growth decisions.

Figure 1: 2000 Population Pyramid

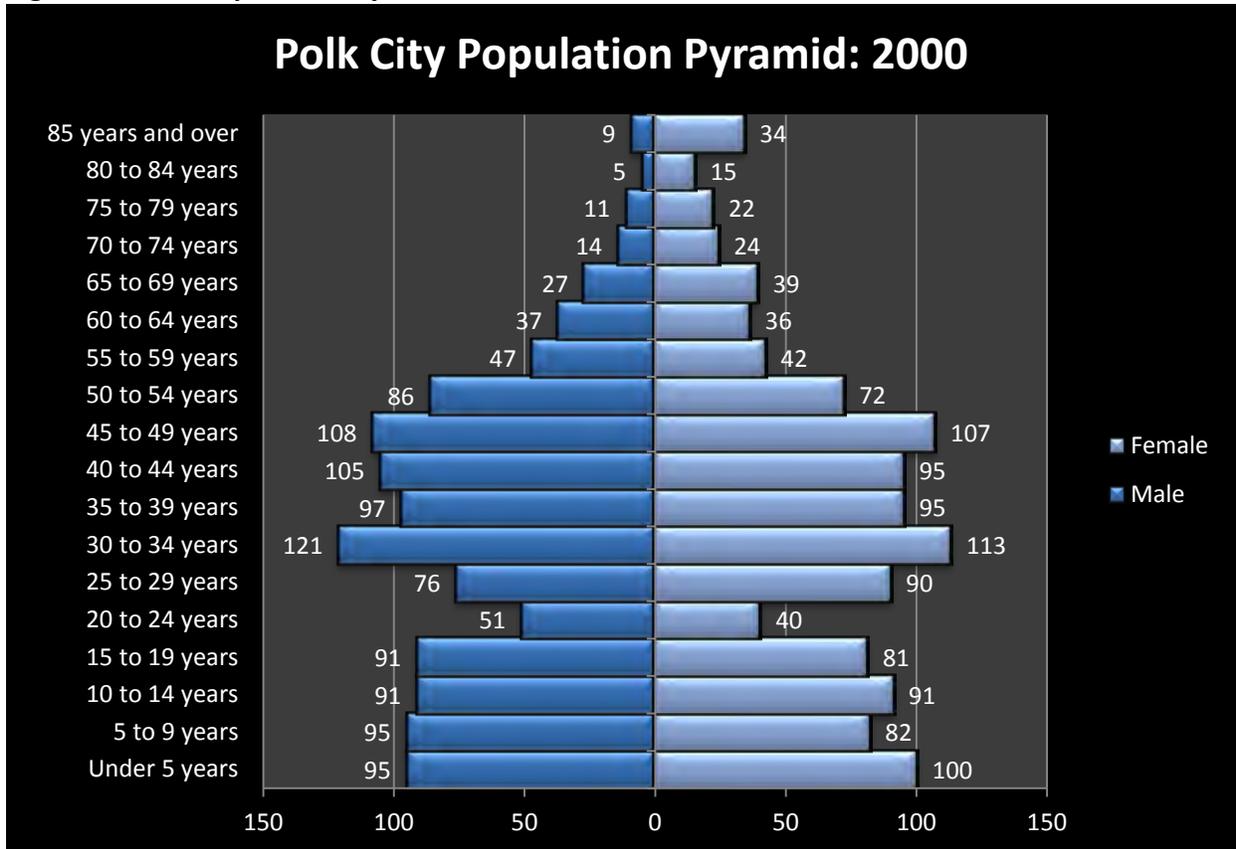
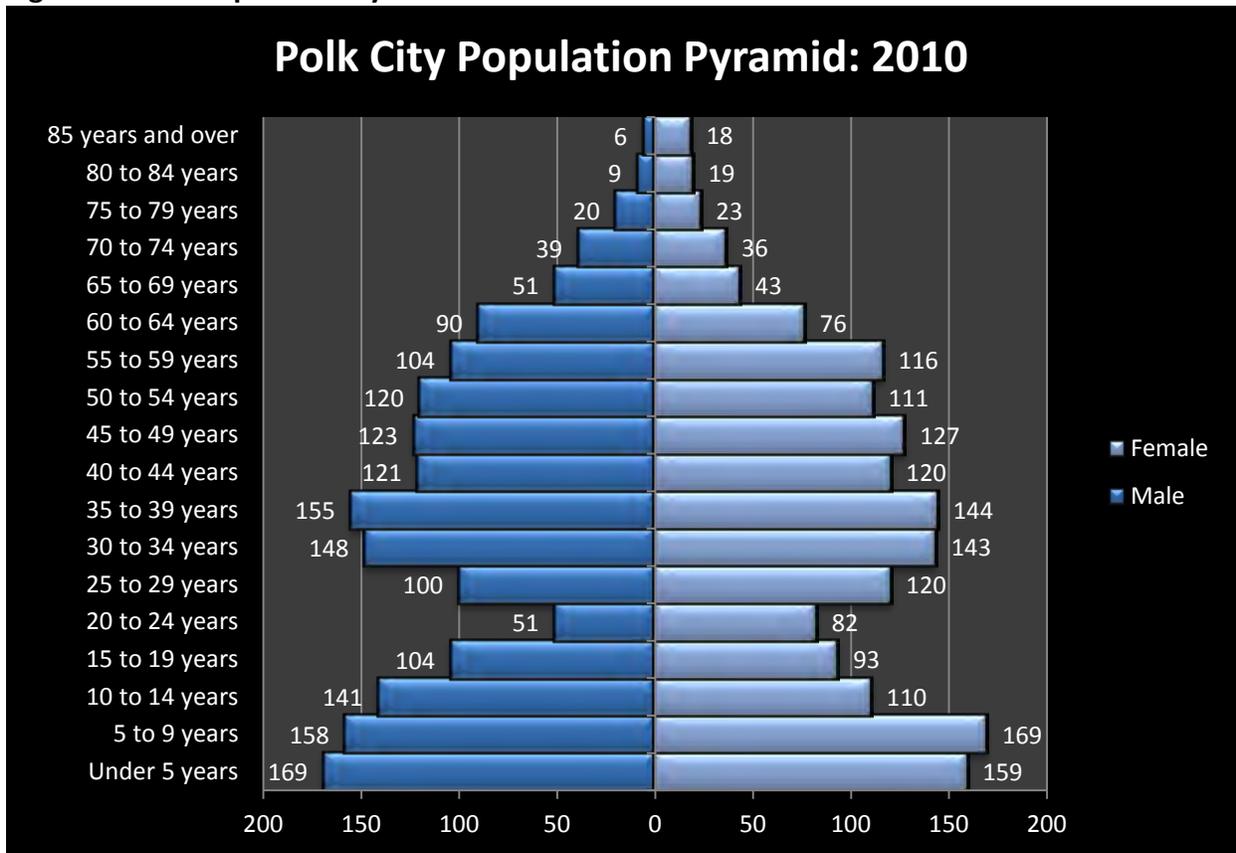


Figure 2: 2010 Population Pyramid



2020 Population Estimate

The 2020 population was estimated as a result of numerous contributing factors including U.S. Census Bureau data and current local development trends and studies. It will then be used to project the future population to 2035.

According to the American Community Survey’s five year estimates, the population of Polk City was approximately 3,976 people in 2013. This number was used as the base population in which the estimated population over the following seven years will be calculated. A *2014 Report on Economic Indicators* of Polk City was published in January of 2015. This report outlines historical building permits by year and category along with average single family housing values. The report indicates that there were a total of 47 residential building permits issued in 2014. The City also completed a study on the *Single Family Active Subdivisions in Polk City* and future development already in the platting stages or in early discussions. Most of these subdivisions will be platted for construction by 2018. The estimated number of additional lots to be built upon by 2018 is 535. Based on recent trends, it is estimated that most of these lots will be fully developed by the year 2020.

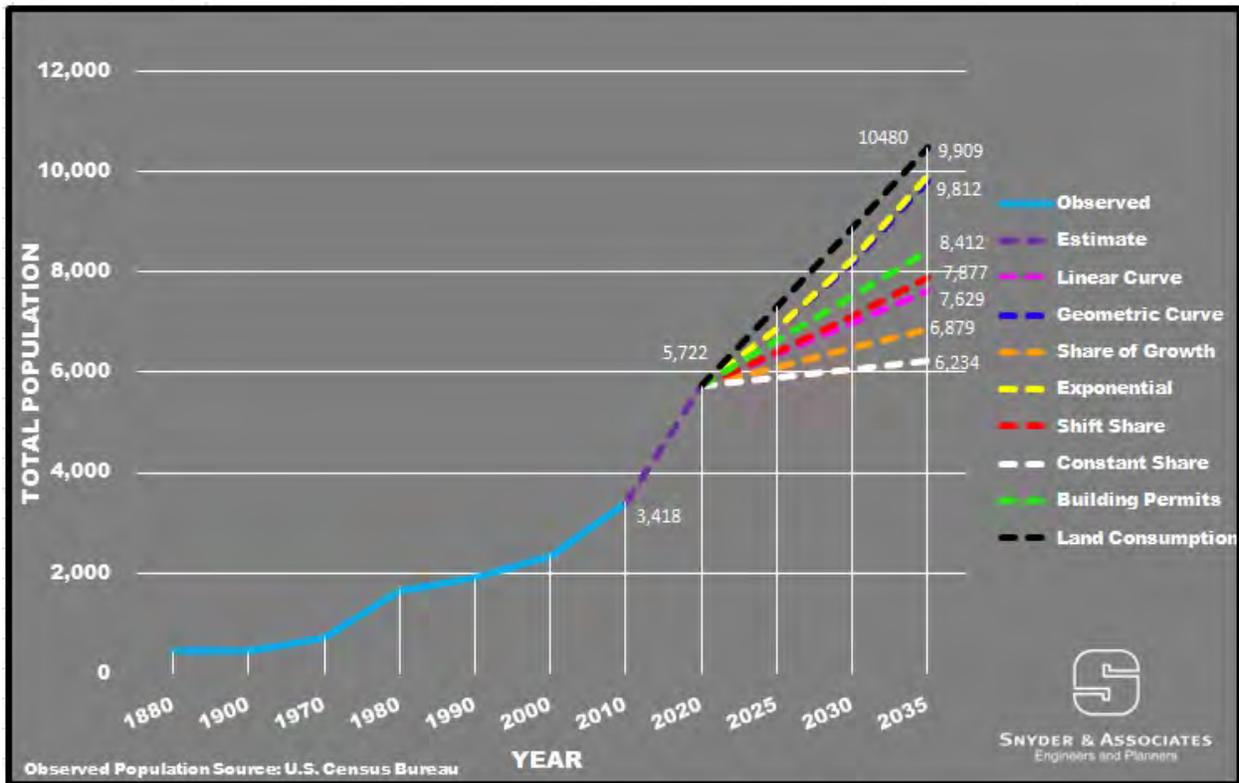
The 2010 Census indicates that the average family size in Polk City was 2.73 people. Since then, Polk City has experienced a significant influx of young families as indicated by the growth of the school district. Since the community is younger on average than surrounding communities, a

safe estimate of 3.00 people will be used to estimate the additional population. Using this estimate, the addition of 582 single family residential lots multiplied by 3.00 people per household, amounts to an additional population of 1,746 from 2013-2020. Added to the 2013 population of 3,976, the estimated 2020 population of Polk City will be 5,722. Numerous projection alternatives were then used to calculate an additional 15 years.

Projection Methods

The following projection methods are using 1990 data as the base year and calculating the population change over the 30 year period to the 2020 population estimation. Projections are prepared for a 20 year time period with an incremental update every five years. Projection method comparisons are illustrated in Figure 3 below.

Figure 3: Population Projection Alternative Comparisons



Alternative 1: Linear Curve Projection

The Linear Curve Projection assumes that the future population will change by the same absolute number over a given period of time, as occurred during the base period. The absolute population change between 1990 and 2020 is 3,814. Over the 30 year period, the average change in population per year was 127.13 residents. Using this same growth rate over an additional 15 years, the 2035 population is projected to be 7,679.

Alternative 2: Geometric Curve Projection

The geometric alternative is a calculation that assumes that the future population will change by the same percentage rate over a given increment of time, as occurred during the base period. The calculated rate of change between 1990 and 2020 was 1.036% per year. Using this same growth rate over an additional 15 years, the 2035 population is projected to be 9,812.

Alternative 3: Exponential Projection

The exponential alternative is similar to the geometric method but views change as occurring continuously rather than at discrete intervals. It uses the natural logarithm of 2.71828 to calculate the exponential growth annually. This method projects the 2035 population to be 9,909.

Alternative 4: Constant Share Projection

Alternative 4 assumes that the smaller area's share of the larger population is held constant at a level observed during the base period and that small areas will grow at the same rate as the larger area. It is estimated that Polk City was 0.0123% the size of Polk County in 2020. Using the projected population of Polk County in 2013 of 505,656, the total population of Polk City in 2035 will be 6,234 (0.0123% of 505,656).

Alternative 5: Share of Growth Projection

The Share of Growth projection technique or apportionment, assumes the smaller areas share of the percent change in population in the larger area will be the same over the projection horizon, as occurred during the base period. Using a simple linear curve projection for Polk County, the estimated population in 2020 will be 464,097. That is an absolute change of 136,957 people and 41.8% change in growth since 1990. Polk City's absolute change during that time span using the estimated 2020 population was 3,814. Therefore, Polk City holds 2.78% of the total growth throughout Polk County. According to the 2.78% county share, the 2035 population of Polk City will be 6,879.

Alternative 6: Shift Share Projection

The Shift Share alternative is designed to deal with changes in population shares. It modifies the constant share method by adding a shift term to account for differences in population variables and characteristics. The projected growth is assumed to be equal to the observed growth from the past period. This projection method indicates that the population in 2035 will be 7,877.

Alternative 7: Average Building Permit Projection

Alternative 7 used for the analysis uses the average number of building permits from 2000-2020 based off the *Single Family Active Subdivision* study and the *2014 Report on Economic*

Indicators provided by the City and developers. Using this data, the average number of building permits issued per year was 59.7 permits. The year 2000 was used as a base year rather than 1990 in order to provide a better assessment of the recent growth for Polk City. With 59.7 new permits issued per year and an estimated three people per household, the additional population per year would be 179.25 resulting in a 2035 population projection of 8,412.

Alternative 8: Land Use Consumption Capacity

Additional analysis was conducted based on available acres for development. An estimated 874 city owned acres was used to estimate the current maximum capacity for development. For the projection, we will use 700 acres to allow for infrastructure and other commercial or recreational uses. By using an average lot size of 0.33 acres, an additional 2,121 homes could be constructed. With the average household size of 3.0 persons, that calculation of an additional 6,363 people combined with the projected 2014 population of 4,117 would give a max capacity of 10,480 residents. If residential construction continues to increase, this projection could be a reality by 2035. At that time, Polk City will need to annex additional acres for future growth.

Population Projection Evaluation

In attempting to accurately project the population of Polk City in 2035, the alternatives were analyzed. Three methods were selected indicating distinct ranges; low, medium and high projection. Using the alternatives to develop a growth range gives decision-makers and planners tools to use for future development assessments. Choosing an appropriate population projection range is extremely important. Selecting a range that is too high or too low can lead to serious challenges when developing land, housing and infrastructure. Underestimating the rate of population growth can lead to shortages of infrastructure and land, while overestimating can result in unnecessary upgrades and money spent. All alternatives were considered and the selected range in population projections is approximately 8,000 to 10,500 people by 2035. Alternatives methods were selected as low, medium, and high projections with slight alterations.

- **LOW PROJECTION:** Alternative 6 (shift share) of 7,877 people was selected as the low alternative. As indicated in Table 1, Polk City has experienced growth rates at a much higher rate than that of Polk County since the 1960's. If that trend continues, Polk City's share of the county population will be increasing at a higher rate than the method projects. Therefore, this method will be considered to be the low end projection.
- **MEDIUM PROJECTION:** Alternative 7 (average building permits) was selected as the medium projection due to its actual observed growth trends within the community. This projection is assuming there will be an average of 59.7 building permits per year, with approximately 3.0 person's habitating the new units. Growth should continue to be monitored through the tracking of building permits and other indicators to determine the accuracy of this projection method.

- **HIGH PROJECTION:** The high projection was selected from Alternative 8 (Land Consumption Capacity). The population was projected at 10,480. This method was used as the maximum growth with the current City owned acres available for development.

The spread between the three projections varies in terms of the average annual population growth rate after 2020, with the low projection assuming a 2.1% annual average growth rate, the medium projection assuming 2.6%, and the high projection assuming 4.4%. If the 2010 age cohort percentages continue, there will be an estimated range of 2,520-3,353 school aged children 19 years or younger, 2,126-2,829 ages 20-39 and 40-59 each, and a range of 945-1,257 ages 60 and over. The selected methods are displayed in figure 4 below.

Figure 4: Population Projections: Selected Alternatives

