

# Memorandum

## City of Lawrence

### Planning and Development Services

**TO:** Tom Markus, City Manager

**FROM:** Jeff Crick, AICP, Planner II

**CC:** Scott McCullough, Planning & Development Services Director

**Date:** October 4, 2016

**RE:** July 2016 City Population Estimates and Projections

#### **Background**

As of July 1<sup>st</sup>, 2016, the estimated population of Lawrence is 97,948. Trend data also shows that a 1.2% annual growth rate is reasonable given the City's historical growth trend from 2000 to 2016. Using the current population growth trend, Lawrence's population in 2030 would be approximately 115,000.

Population estimates and projections provide insight into future demands on utilities and infrastructure such as water & wastewater planning, transportation & road planning, and traffic modeling. They can serve as a signal to policymakers and staff when there are major changes in population trends that may affect economic development, school planning, and the potential impacts to Federal fund allocations.

When discussing future populations there are two separate but necessary components to ascertaining what the future population number for Lawrence would be. Calculating a population change is assessed through two population change measures:

- **Population Estimates:** Population estimates are approximations of current population. It is also important to note that population estimates never extend beyond the present and are used to determine what the current population is for Lawrence.
- **Population Projections:** Population projections are means of providing a picture of the population as it may develop in future years, under varying sets of real-world growth conditions. Population projections are used to help plan for the future growth of Lawrence.

Having accurate population estimates helps ensure a stronger, more accurate population projection for Lawrence.

## Population Estimates

Planning Staff issues biannual population estimates based on a prescribed Census Bureau formula. It includes totaling the number of new residential dwelling units constructed annually; subtracting the number of dwellings that were demolished during the same time period to derive the total number of new dwelling units built; then, multiplying the number of new dwelling units by the vacancy rate for the city to establish the number of new occupied dwelling units. Then the total number of occupied dwelling units is multiplied by the average number of persons per household to derive a figure for the new population residing in the new dwelling units.

Finally, this new population increase is added to the latest decennial Census population to establish a new estimate for the City's population. The persons per household and vacancy rate figures are supplied by the Census Bureau, updated annually, and the updated figure is applied to the new dwelling units built since the latest decennial Census population figure was released. That formula reads as follows:

$$[(SHU-SDU)*.98*SPPH*SOCR]+[(MHU-MDU)*.98*MPPH*MOCR]+GQ+DCF=Pop\ Estimate$$

<b>.98</b>	Assumes 2% of all building permits units applied for are never built	<b>MOCR</b>	Multi Family Occupancy rate
<b>DCF</b>	Decennial Census Population	<b>MPPH</b>	Multi Family Persons per household
<b>GQ</b>	Group Quarters Population	<b>SDU</b>	Single Family Demolished Units
<b>MDU</b>	Multi Family Demolished Units	<b>SHU</b>	Single Family Housing Units Added
<b>MHU</b>	Multi Family Housing Units Added	<b>SOCR</b>	Single Family Occupancy rate
		<b>SPPH</b>	Single Family Persons per household

It is important to note that typically the 2010 decennial Census population figure would be used as the base; however, because the city challenged the 2010 decennial Census based on the determination that the housing units were undercounted within the 2010 decennial Census population figure; staff is using the 2000 decennial Census figure instead for the 2015 estimate.

Using this equation, there are an estimated 97,948 people living in the City of Lawrence as of July 1, 2016.

The table below illustrates the staff issued population estimates, as well as the Census Bureau's annual estimates. The population estimate released by Planning Staff is based on there being 40,935 housing units in the city as of July 1, 2016. This is determined by taking the number of housing units reported with the 2000 Census and adding the number of new units built (determined through building permits) and subtracting the number of demolished units.

An important note in the table above is that the City challenged the Census estimates in 2005 and 2006, which resulted in the Census Bureau changing their population estimates for those years to reflect the staff estimates.

City of Lawrence: Population Estimates: 2000-2015					
Estimate: July 1	City Estimate	Change/Year	% Change	Census Estimate	Diff.
<b>2000</b>	80,508			80,558	-50
<b>2001</b>	81,780	1,272	1.58%	81,973	-193
<b>2002</b>	83,310	1,530	1.87%	83,654	-344
<b>2003</b>	84,844	1,534	1.84%	85,335	-491
<b>2004</b>	86,448	1,604	1.89%	87,100	-652
<b>2005</b>	88,664	2,216	2.56%	88,664	0
<b>2006</b>	89,110	446	0.50%	89,110	0
<b>2007</b>	90,311	1,201	1.35%	89,847	+464
<b>2008</b>	90,866	555	0.61%	90,504	+362
<b>2009</b>	91,464	598	0.66%	92,048	-584
<b>2010</b>	92,727	1,263	1.38%	88,037	+4,690
<b>2011</b>	93,116	389	0.42%	89,050	+4,066
<b>2012</b>	93,944	828	0.89%	89,888	+4,056
<b>2013</b>	95,065	1,121	1.19%	91,176	+3,889
<b>2014</b>	96,292	1,227	1.29%	92,763	+3,529
<b>2015</b>	97,193	901	0.94%	93,917	+3,276
<b>2016</b>	97,948	755	0.78%		

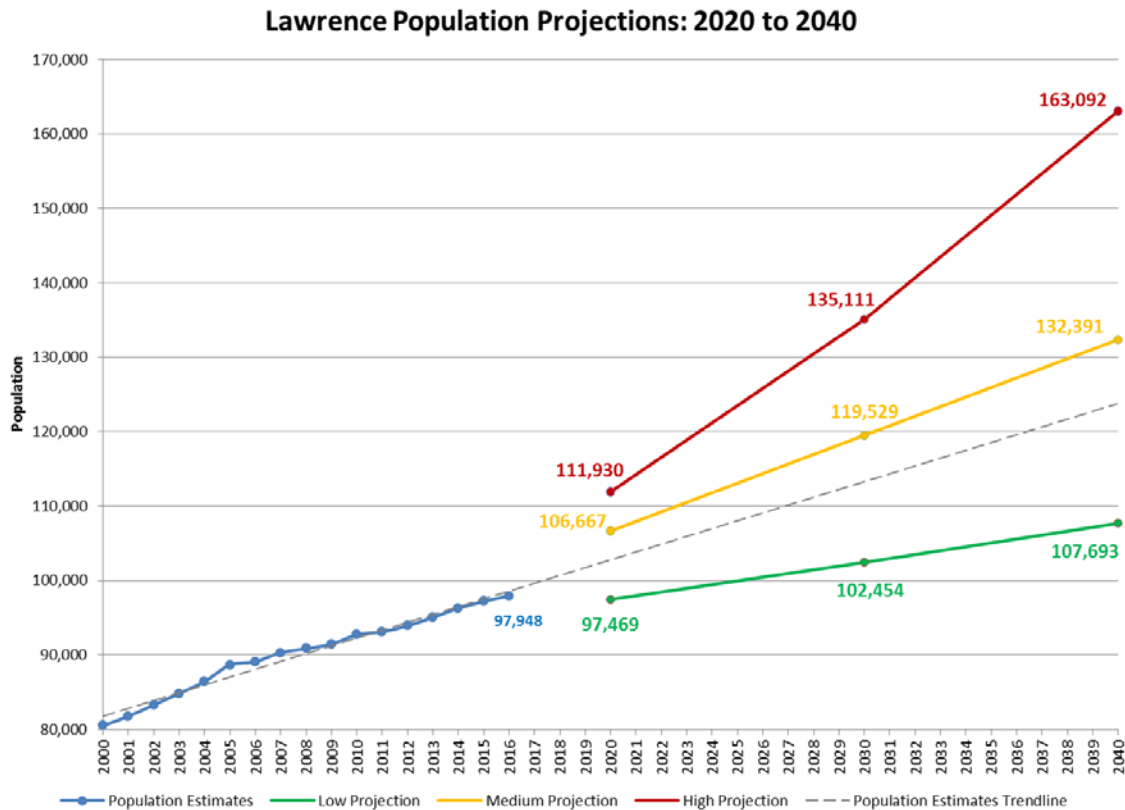
### **Population Projections**

Population projection methods are primarily based on trend data, and the most accurate projections can only be completed every 10 years after sufficient trend data has been established.

Planning Staff has analyzed the effects that short and long-term growth trends would have on the population projections. Staff analyzed those growth trends in 2011 and issued new population projections (2011 Population Projections). Given recent population trends, staff is of the opinion that Lawrence is between the low and medium population projections from *Horizon 2020* (completed in 2001), and the department currently projects Lawrence to reach between 102,000 and 135,000 people in 2030, which would be consistent with a medium projected growth rate. A 2030 estimated Lawrence population between 120,000 and 125,000 was used to forecast the growth scenarios for the [Integrated Water Utilities Plan](#) and the [Wastewater Facilities Master Plan](#).

2011 Population Projections - City of Lawrence			
Projections	2020	2030	2040
<b>Low</b> (Average Growth Rate 2005 - 0.5%)	97,469	102,454	107,693
<b>Medium</b> (Linear Regression 2000-2009)	106,667	119,529	132,391
<b>High</b> (Average Growth Rate 2000-2005 - 1.9%)	111,930	135,111	163,092

A medium population projection for the City of Lawrence would assume a 1.2% population growth annually over the coming years based on population historic trends.



### **Analysis of Census 2010 Figures**

While the U.S. Census Bureau provides a great deal of valuable data products, Planning Staff has found through research and replication that the Census products have under represented the true population of Lawrence since 2005. Staff challenged the Census estimates in 2005 and 2006, successfully changing those figures based on the best available data: local permit records. Staff also challenged the 2010 Decennial Census figure, and while the Census Bureau acknowledged that our housing unit count may be more accurate, they were unable to change the decennial census figure for 2010. There are many factors, such as student and other transient populations that may account for this difference. Through studying Development Services building permit and Utility data, Planning Staff believes that the 2010 Decennial Census does not fully reflect the existing population of Lawrence today.

Staff has based the current population estimates on the 2000 Census figure instead of the 2010 Census figure because based on the best local data available, the more recent figure undercounted the living units within the City, and therefore undercounted the true population of Lawrence.

The Census Bureau releases their own population estimates every year based on a housing unit formula, but acknowledges that ultimately the community has the best available data. Therefore, they provide a way for the cities and counties to challenge annual population estimates using building permit data, and the City successfully challenged the Census Bureau's population estimates in 2005 and 2006.

Staff studied the 2010 census tract-level data to determine where the discrepancy between the in-house building permit data and the 2010 Decennial Census figures exists. Staff found that there were tracts showing a decline in population while showing an increase in housing units. The reverse was also true; some tracts showed an increase in population, while there was a decrease in housing units.

As an example, Tract 3, which includes a portion of the Oread Neighborhood, showed an increase in population from 2000 to 2010 of 621 people, while the number of housing units decreased 192. Following the formula used by the Census Bureau, this tract should have shown a decrease of approximately 442 residents. Another example is Tract 9.01, which is south of the University of Kansas campus. This tract showed the addition of 172 housing units from 2000 to 2010, but a decrease of 345 people. Also, important to note is the loss of 554 housing units and 1,785 people from Tract 4, which includes the University of Kansas campus. At this point, staff identified that significant discrepancies exist between what we estimate our housing unit and corresponding population numbers should have been for 2010 and what the Census Bureau determined through the 2010 Decennial Census. Staff plans to work with the Census Bureau in advance of the 2020 Decennial Census in order to resolve this discrepancy.

### **Conclusion**

Staff produces population estimates and population projections based on the best available data as outlined in this memo. The July 1, 2016 population estimate is 97,948. Based on this estimate and the growth trend from 2000 to 2016, staff anticipates that there will be approximately 115,000 residents in Lawrence in 2030.