Salt Lake County
Small Area Estimates: 2010-2014

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Abstract

This report shares tract level postcensal housing unit and population estimates for Salt Lake County for five years (2010-2014) based on the housing unit method, which capitalizes upon detailed building permit data. The research indicates that Salt Lake County continues to grow, develop, and change, especially as the economic recovery has progressed. Rapid changes have been geographically concentrated and conditions vary dramatically by neighborhood. We found that over 62,600 people were added to the population of Salt Lake County from the 2010 Census to July 1, 2014, a 6.1 percent increase. The 2014 population estimate of 1,092,283 is 541 people above the Census Bureau population estimate for the same date. Results of population and housing changes are discussed by tract and by county, and are further compared to county-level estimates from other sources. Methodologies, underlying assumptions, and data sources are explained.

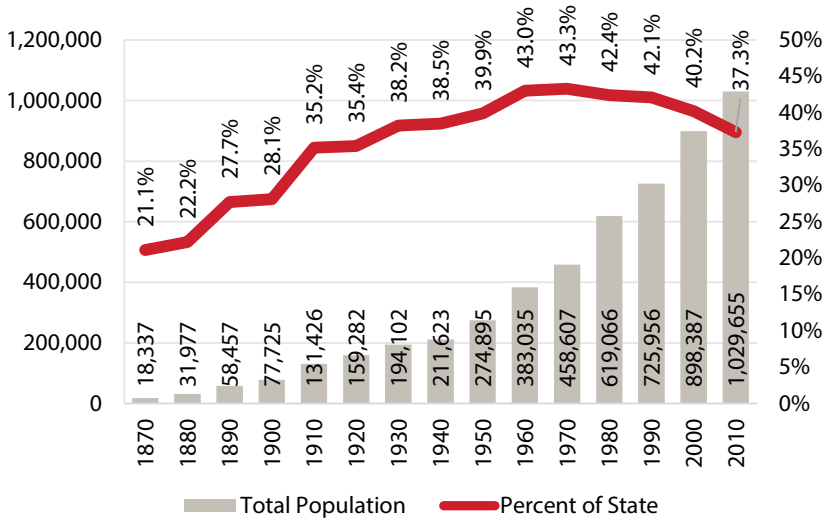
Introduction

The national census, conducted every ten years, provides the most complete, detailed, and accurate count of Utahns down to the neighborhood level. In the five years since the enumeration, the 2010 Census results have become dated as communities in Salt Lake County continue to evolve, with demographic and housing changes occurring unevenly throughout the valley. Accurate estimates of population, households, group quarters populations, and housing units provide an essential factual foundation for a wide range of program, product, service, and investment planning and evaluation.[1] There is a growing need for more contemporaneous and accurate data at ever smaller geographic scales. To our knowledge, there are no other freely

1 Population refers to residents. Household population includes all persons residing in occupied housing units. It includes people living alone or with others (family or nonfamily). In a housing unit, the occupant(s) have living quarters separate from neighboring housing units. Group quarters are living quarters in which people live together in a group setting and where owners provide services for residents. Examples include homeless shelters, college dormitories, and correctional facilities.

available, point-in-time tract level estimates of population and housing units for Salt Lake County.

Figure 1
Salt Lake County Population: Total and Share of State, 1870-2010



Source: U.S. Census Bureau decennial census counts and Kem C. Gardner Policy Institute computations

This set of estimates, produced by the Kem C. Gardner Policy Institute, addresses that growing demand. We have produced annual population, household, group quarters population, and housing unit (by tenure) estimates for all 212 census tracts within Salt Lake County for July 1 of each year, 2010 to 2014.[2] The method we have utilized is based mostly on estimated changes in housing units. These changes have been inferred from building permit and demolition data. Importantly, we have not considered vital records data which would explicitly account for births and deaths. We plan to update this work annually and begin to systematically build out similar postcensal estimates for additional geographies (i.e., counties, census tracts beyond Salt Lake County, and incorporated cities). Other salient population characteristics, such as race, sex, and age are in our long-term scope of work.

2 A small, relatively permanent statistical subdivision of a county delineated by a local committee of census data users for the purpose of presenting data. Census tract boundaries normally follow visible features, but may follow governmental unit boundaries and other non-visible features in some instances; they always nest within counties.(U.S. Census Bureau, 2015). Census Tract reference maps are available in the appendix.

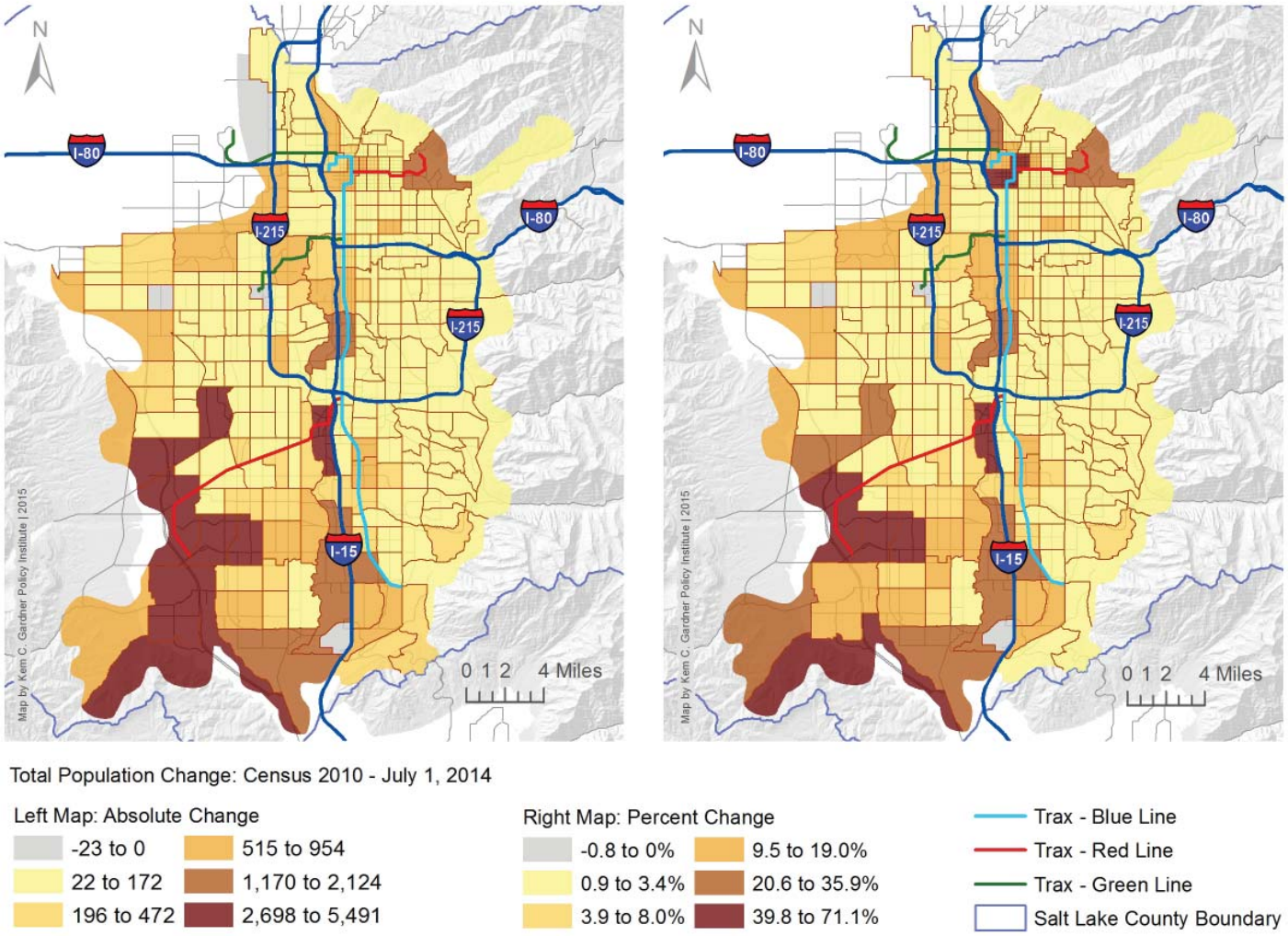
Table 1
Salt Lake County Estimates Results for Key Variables

Variables	April 1, 2010	July 1, 2010	July 1, 2011	July 1, 2012	July 1, 2013	July 1, 2014	Percent Change 2010-2011	2011-2012	2012-2013	2013-2014
Total Population	1,029,655	1,032,725	1,054,591	1,065,229	1,077,419	1,092,283	2.1%	1.0%	1.1%	1.4%
Household Population	1,015,649	1,018,719	1,039,183	1,049,513	1,061,686	1,076,523	2.0%	1.0%	1.2%	1.4%
GQ Population*	14,006	14,006	15,408	15,716	15,733	15,760	10.0%	2.0%	0.1%	0.2%
Households	342,622	343,617	346,931	350,414	354,353	358,908	1.0%	1.0%	1.1%	1.3%
Total Housing Units	364,031	365,049	368,371	371,749	375,598	380,106	0.9%	0.9%	1.0%	1.2%
Occupied Units	342,622	343,617	346,931	350,414	354,353	358,908	1.0%	1.0%	1.1%	1.3%
Owner Occupied	230,419	230,746	232,260	234,091	236,705	239,932	0.7%	0.8%	1.1%	1.4%
Renter Occupied	112,203	112,871	114,671	116,323	117,648	118,976	1.6%	1.4%	1.1%	1.1%
Vacant Units	21,409	21,432	21,440	21,335	21,245	21,198	0.0%	-0.5%	-0.4%	-0.2%
Average Persons Per Household	2.96	2.96	3.00	3.00	3.00	3.00				
Owner	3.13	3.13	3.16	3.16	3.16	3.17				
Renter	2.63	2.63	2.67	2.66	2.66	2.66				
Increase from Previous July 1	10,918	14,365	21,866	10,638	12,190	14,864				
Births	13,501	18,249	17,895	17,603	18,118	17,707				
Deaths	4,022	5,393	5,669	6,168	6,352	6,335				
Natural Increase	9,479	12,856	12,226	11,435	11,766	11,372				
Implied Net Migration	1,439	1,509	9,640	-797	424	3,492				

**The increase in group quarters population from 2010 to 2011 is due to an increase in dormitory population at the University of Utah and Westminster College and an increase in population at the county jail.*

Sources: The Kem C. Gardner Policy Institute; U.S. Census Bureau, 2010 Census; Utah Office of Vital Records and Statistics

Figure 2
Tract Results: Total Population Change



Source: Kem C. Gardner Policy Institute
Note: Binning definitions are set to natural breaks classification of positive growth tracts.

Salt Lake County Results

Total Population

Salt Lake County remains Utah's economic hub and most populous county. With over 1 million residents, it is home to nearly 4 in 10 Utahns (Figure 1). County-level results of our housing unit method analysis are shown in Table 1. Our analysis concludes that, as of July 1, 2014, the estimated population of Salt Lake County was 1,092,283. This is a 1.4 percent increase, or 14,864 additional people, from the 2013 estimate of 1,077,419, and 6.1 percent increase (62,628 additional people) from the 2010 Census count of 1,029,655.

The areas of highest growth occurred in the southwest, south-central and central areas of the county, as shown in Figure 2 and Table 2. The largest total population increase took place in Tract 1130.20 in South Jordan, which gained 5,491 people since the 2010 Census. The second largest increase, a population gain of 4,110, occurred in a Herriman tract which borders the first place tract. Six of the top ten tracts have territory that is mainly in South Jordan, Herriman, or Bluffdale. However, there are notable high growth tracts outside these cities. The most prominent are Tract 1143 of West Jordan and Tract 1124.03 of Midvale, each of which added over 3,000 inhabitants, ranking third and sixth in population growth.

Though many tracts with the largest absolute population growth were located in South Jordan, Herriman, or Bluffdale, the tracts with highest growth rates were more scattered. A few South Jordan and Herriman tracts still make the list, but Midvale, Salt Lake City, and Murray also demonstrate high rates of population growth. Tract 1124.03 of Midvale grew the fastest: 71 percent since the 2010 Census. The tract is located in

Table 2
Population Growth Census 2010 to July 2014: Top Twenty Tracts, Absolute and Percent Change

Total Population Growth

Rank	Tract	Tract Location	Census 2010 Population	July 1, 2014 Population Estimate	Absolute Change
1	Tract 1130.20	South Jordan (Daybreak)	11,672	17,163	5,491
2	Tract 1131.07	Herriman (Central)	21,591	25,701	4,110
3	Tract 1143.00	West Jordan	15,965	19,254	3,289
4	Tract 1151.06	Herriman (South/West)	7,858	11,143	3,285
5	Tract 1130.19	South Jordan	5,973	9,202	3,229
6	Tract 1124.03	Midvale (I-15 and 7800 S)	4,473	7,654	3,181
7	Tract 1152.09	S Jordan/W Jordan (West)	6,110	8,808	2,698
8	Tract 1121.00	Murray (I-15 and 4800 S)	7,264	9,388	2,124
9	Tract 1128.10	Bluffdale	7,066	8,873	1,807
10	Tract 1014.00	Salt Lake City (University of Utah)	4,816	6,258	1,442
11	Tract 1128.17	Draper/South Jordan (along west side I-15)	6,374	7,783	1,409
12	Tract 1128.23	Draper	4,493	5,663	1,170
13	Tract 1135.25	West Valley City (Southwest)	7,102	8,056	954
14	Tract 1131.05	Herriman (West)/ Copperton	4,235	5,170	935
15	Tract 1145.00	West Valley City/Salt Lake City (West)	6,037	6,953	916
16	Tract 1116.00	South Salt Lake/ Millcreek (West)	7,472	8,305	833
17	Tract 1127.00	Sandy	4,821	5,602	781
18	Tract 1128.19	Draper	7,040	7,812	772
19	Tract 1139.07	West Bench (Magna, West Valley, West Jordan)	6,838	7,563	725
20	Tract 1130.11	South Jordan	5,806	6,450	644

Total Population Growth Rate

Rank	Tract	Tract Location	Census 2010 Population	July 1, 2014 Population Estimate	Percent Change
1	Tract 1124.03	Midvale (I-15 and 7800 S)	4,473	7,654	71.1%
2	Tract 1130.19	South Jordan	5,973	9,202	54.1%
3	Tract 1130.20	South Jordan (Daybreak)	11,672	17,163	47.0%
4	Tract 1152.09	S Jordan/W Jordan (West)	6,110	8,808	44.2%
5	Tract 1151.06	Herriman (South/West)	7,858	11,143	41.8%
6	Tract 1140.00	Salt Lake City (Downtown)	1,501	2,112	40.7%
7	Tract 1021.00	Salt Lake City (Central)	1,457	2,037	39.8%
8	Tract 1001.00	Salt Lake City (North/Central)	1,529	2,078	35.9%
9	Tract 1014.00	Salt Lake City (University of Utah)	4,816	6,258	29.9%
10	Tract 1121.00	Murray (I-15 and 4800 S)	7,264	9,388	29.2%
11	Tract 1128.23	Draper	4,493	5,663	26.0%
12	Tract 1128.10	Bluffdale	7,066	8,873	25.6%
13	Tract 1128.17	Draper/South Jordan (along west side I-15)	6,374	7,783	22.1%
14	Tract 1131.05	Herriman (West)/ Copperton	4,235	5,170	22.1%
15	Tract 1143.00	West Jordan	15,965	19,254	20.6%
16	Tract 1131.07	Herriman (Central)	21,591	25,701	19.0%
17	Tract 1019.00	Salt Lake City (Central)	2,497	2,913	16.7%
18	Tract 1127.00	Sandy	4,821	5,602	16.2%
19	Tract 1115.00	South Salt Lake	1,794	2,080	16.0%
20	Tract 1145.00	West Valley City/Salt Lake City (West)	6,037	6,953	15.2%

Source: Kem C. Gardner Policy Institute

the middle of Salt Lake County, spanning a section of Interstate 15. Tracts 1130.19 and 1130.20 of South Jordan followed at 54 and 47 percent increases. Four Salt Lake City tracts appear among the top ten fast-growing tracts, all increasing from their 2010 Census populations by at least 30 percent.

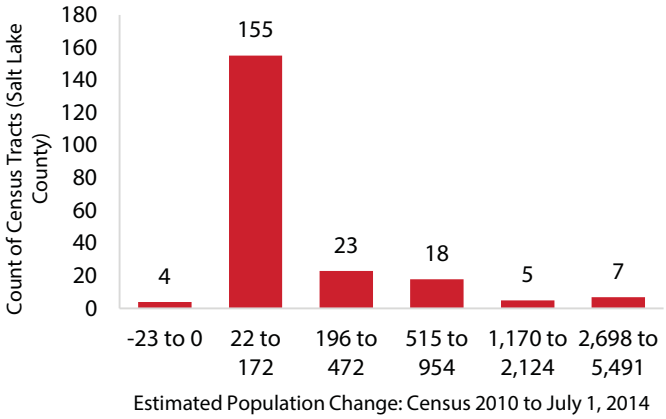
Because most population growth resulted from new construction, especially of owner-occupied units, the tracts which added the most owner units are similar to those which experienced the most overall population change. The greatest additions of owner units are mainly concentrated in southwestern tracts that include areas of West Jordan, South Jordan, Copperton (township), Herriman and Bluffdale. South Jordan's Tract 1130.20 (Daybreak) led the way, adding almost 1,200 owner units. The south and west reaches of Herriman followed, with 817 owner units added to Tract 1151.06. Other top ten tracts for growth in owner units range from over 200 to almost 700 units added. Two are outside of the southwest area, in Midvale and Draper. Figure 3 shows the distribution of population change across tracts. Only two tracts lost population, and only slightly so, losing 23 (Tract 1133.10) and 14 (Tract 1134.09) people. Tracts 1128.18 and 9800 had no change, the latter remaining unpopulated. Most tracts gained 22 to 172 people, the range of the first natural break bin for positive growth tracts.

Contributors to Population Change

Using our housing unit method, population changes occur through three main channels: new construction, existing housing units, and group quarters populations.[3] New construction indicates housing units that are built and become occupied during the estimate period, which covers April 2010 through June 2014. Existing housing units are those counted in the 2010 Census on April 1, 2010. New construction introduces new households and population. The population in existing housing units changes through increases or decreases in persons per household. Our analysis applied increases in persons per household. We collected primary data which indicates that group quarters populations increase during this estimate period. In our implementation of the housing unit method, the only other possible population

3 The methodology is explained in detail in the methodology section.

Figure 3
Estimated Population Change Among Census Tracts



Source: Kem C. Gardner Policy Institute
Note: The binning definition is set to a natural breaks classification of positive growth tracts.

changes come through housing unit demolitions, which remove housing units and decrease household population.

As shown in Table 3, the vast majority of growth in Salt Lake County from the 2010 Census to July 2014 is due to new housing construction. Populations in new housing units account for

Table 3
Contributors to Population Change

	Estimated Total Population Growth	Growth from New Construction			Growth from Existing Units			Growth from Group Quarters
		Total	Owner	Renter	Total	Owner	Renter	
Salt Lake County	62,628	51,076	33,662	17,414	9,798	6,522	3,276	1,754
	100%	81.6%	53.7%	27.8%	15.6%	10.4%	5.2%	2.8%

Source: Kem C. Gardner Policy Institute.
Note: Values may not add to 100% due to rounding. Existing units were counted in the 2010 Census and were not demolished during the estimation period.

81.6 percent of the increase—about 51,000 people. Population increases to existing units account for 15.6 percent of the increase. Group quarters increases are small in comparison, accounting for 2.8 percent of the increase.

New Construction

About two-thirds of the population added from new construction is added to owner-occupied units (66 percent) as compared to 34 percent for renter-occupied units. Of all population added to Salt Lake County through any channel, over half are introduced through new owner-occupied construction, and 28 percent through new renter-occupied construction.

The top-growing tracts in Salt Lake County confirm the dominance of new construction as a basis for population change (Table 4). Eighteen of the twenty top growth tracts owe over 90 percent of their population gains to new construction. However, the top tracts do reflect diversity in the construction types of new construction. Owner-occupied construction accounts for at least 60 percent of the growth estimated in eleven of the top twenty tracts. Only two tracts in the top twenty had a similar contribution from renter-occupied construction. Six tracts, however, have a strong mix of construction types, adding sizeable new populations by means of both owner and renter construction. Standing as the outlier to the new construction trend is the remaining tract, Tract 1014 (the University of Utah), which grew almost entirely from increases in its group quarters population.

Some other trends in owner and renter construction are also worthy of note. The percentage increase in owner-occupied units is highest by far in Tract 1124.03 of Midvale. Having only 441 owner units at Census 2010, this amount more than doubled by July 2014. Construction in this area is largely from apartments, condos, and townhomes, so new owner units are most likely townhomes. The other tracts which added the most owner units experienced 13 to 50 percent increases in their amounts of owner units.

Populations in these new owner units were estimated by multiplying tract-specific persons per household by the corresponding number of new owner-occupied households. The nearly 1,200 units added to Tract 1130.20 (Daybreak) resulted in an owner household population increase of over 4,200.

There are clear geographic differences in renter-occupied housing construction as compared to owner construction. While some southwest area tracts which experienced high owner construction also added hundreds of rental units, there are other pockets of high rental unit growth. Several tracts with the most added renter units are adjacent to Interstate I-15. This includes Tract 1121 of Murray (781 units), which was the tract with the most renter units added and occupied. Second to it and also along I-15 is Midvale's Tract 1124.03 (631 units). Two downtown Salt Lake City tracts are also present in the top ten, as well as one in the South Salt Lake/Millcreek area and another which covers parts of Draper and South Jordan.

The Murray and Midvale tracts with the most new rental units added approximately 2,000 and 1,800 people to their renter household populations. Three additional tracts also added over 1,000 people to renter households. Of tracts with the most new rental units, Salt Lake City's Tract 1140 had the highest growth rate for renter household population, at 76%. The area of this downtown tract includes the City Creek Center.

Table 4
Population Growth Census 2010 to July 2014: Top Twenty Tracts, Contributors to Population Growth

Rank: Total Population Growth	Tract	Tract Location	Total Population Growth	Growth from New Construction		Growth from Existing Units		Growth from Group Quarters
				Owner	Renter	Owner	Renter	
1	Tract 1130.20	South Jordan (Daybreak)	5,491	76%	22%	2%	0%	0%
2	Tract 1131.07	Herriman (Central)	4,110	58%	37%	4%	1%	0%
3	Tract 1143.00	West Jordan	3,289	53%	42%	3%	1%	0%
4	Tract 1151.06	Herriman (South/West)	3,285	98%	0%	2%	0%	0%
5	Tract 1130.19	South Jordan	3,229	84%	15%	2%	0%	0%
6	Tract 1124.03	Midvale (I-15 and 7800 S)	3,181	42%	57%	0%	1%	0%
7	Tract 1152.09	S Jordan/W Jordan (West)	2,698	62%	36%	1%	1%	0%
8	Tract 1121.00	Murray (I-15 and 4800 S)	2,124	3%	93%	2%	2%	0%
9	Tract 1128.10	Bluffdale	1,807	69%	27%	3%	1%	0%
10	Tract 1014.00	Salt Lake City (University of Utah)	1,442	0%	0%	0%	3%	97%
11	Tract 1128.17	Draper/South Jordan (along west side I-15)	1,409	41%	55%	3%	2%	0%
12	Tract 1128.23	Draper	1,170	75%	21%	3%	1%	0%
13	Tract 1135.25	West Valley City (Southwest)	954	93%	0%	6%	1%	0%
14	Tract 1131.05	Herriman (West)/ Copperton	935	96%	0%	4%	1%	0%
15	Tract 1145.00	West Valley City/Salt Lake City (West)	916	49%	44%	4%	2%	0%
16	Tract 1116.00	South Salt Lake/ Millcreek (West)	833	21%	68%	1%	5%	5%
17	Tract 1127.00	Sandy	781	37%	57%	4%	2%	0%
18	Tract 1128.19	Draper	772	91%	0%	6%	2%	0%
19	Tract 1139.07	West Bench (Magna, West Valley, West Jordan)	725	91%	0%	7%	2%	0%
20	Tract 1130.11	South Jordan	644	62%	29%	7%	1%	0%

Note: Values may not add to 100% due to rounding.
Source: Kem C. Gardner Policy Institute

Existing Units

At the county level, 15.6 percent of population growth, or nearly 9,800 people, were added in existing housing units rather than through new construction. This growth resulted from an increase in average persons per household introduced by the method. As tract values for average persons per household are not available for single-year periods following the 2010 Census, single-year county level data was analyzed. We applied household size increases based on the county-level increase from the 2010 Census to 2011 American Community Survey (ACS).[4] In Salt Lake County, owner households had an average household size of 3.13 in the 2010 Census, and increased to 3.15 in the 2011 ACS. Renter households increased from 2.63 to 2.66.

Considering tracts with any household population change, the average tract added 47 people in existing housing units. The top additions occurred in Tracts 1131.07 (Herriman), 1143 (West Jordan), and 1130.20 (South Jordan) and resulted in 202, 152, and 109 people added to already-existing units.

Group Quarters

The estimated Salt Lake County group quarters population on July 1, 2014 is 15,760. This population is divided among 101 of the county's 212 census tracts. Group quarters populations were held at the Census 2010 levels through July 2014 with the exception of three tracts. Tract 1014, the University of Utah, added 1,403 people to its dormitory population, more than doubling the group quarters population reported by the 2010 Census. Westminster College's dorm population (Tract 1133) increased by 310, or 62 percent. Tract 1116, home to the county jail, increased 41 people, or 2 percent.

Vacant Units

Vacant units for each tract are based on the 2010 Census counts of occupied and vacant units. Following the Census, the number of vacant housing units in each tract changed with new construction or demolitions.

The standout tract for vacant units is Tract 1101.02, which includes the mountain front area of Cottonwood Heights, the census-designated place Granite, and Big and Little Cottonwood canyons. The 1,154 vacant units in this tract remain virtually the same as at the 2010 count and consist mainly of seasonal units, presumably ski season rentals. Forty-one percent of housing units in this tract are vacant, a strong outlier compared to the next highest tract: Tract 1008.00 (Salt Lake City), with 17 percent vacancy.

At the county level, vacant units decreased from 21,409 in the April 1, 2010 count to 21,198 in the July 1, 2014 estimate.

4 This adjustment is further explained in the methodology section of this paper.

This is a decline of 211 units or 1 percent. Consequently, tract level changes to vacant units are small. The three tracts which gained the most vacant units were Tract 1124.03 (Midvale), 1152.09 (South Jordan/West Jordan), and 1143 (West Jordan), with 24, 22, and 20 vacant units added in each. These tracts are among the top ten tracts in total population growth. All experienced large amounts of new construction, particularly in renter units. The added vacancies result from our method's introduction of higher rates of vacancy for renter construction than owner construction.[5]

The highest decreases in vacant units occurred in Tracts 1135.25, 1133.10, and 1134.09 of West Valley City, with 58, 50, and 44 vacant units removed from each tract. As expected, these three tracts also experienced the most demolition during the estimate period.

Comparison to Alternative Estimates

We have compared this new set of estimates for Salt Lake County to alternative estimates, including those provided by the U.S. Census Bureau, in order to evaluate our data, assumptions, methods, and results. However, there are significant challenges to using Census Bureau data products for yearly, small area comparison. The 2000 Census was the last census to produce "long form" data. It was replaced by the American Community Survey (ACS). The 5-year ACS is now the primary source of tract level demographic and socioeconomic data provided by the federal government. The "long form" estimates were based on larger samples sizes, were much more accurate, and interpretation of the point-in-time estimates was relatively straight forward. The downside was that these data were only generated once every ten years.

With the ACS, the tract level estimates are generated annually, but for 5-year time periods. Because these samples are small, margins of error often overwhelm the point estimates. Users of the data may overlook this and misinterpret the data as a result. Five-year period estimates are difficult to interpret, especially since conditions at a small geography may change dramatically over the time period. Also, using that dataset to measure growth is conceptually difficult and the timeliness of the data is problematic. The Census Bureau recommends measuring growth using non-overlapping periods (i.e. 2005-2009 and 2010-2014). At the time of our model development, there were no non-overlapping periods for the 5-year estimates, resulting in a void of data to measure the growth of neighborhoods and communities. Our small area estimates of population, households, housing units (by vacancy status and tenure), and group quarters populations for Salt Lake County by census tract help to address this data void and add context when new ACS releases are made.

5 This adjustment is further explained in the methodology section of this paper.

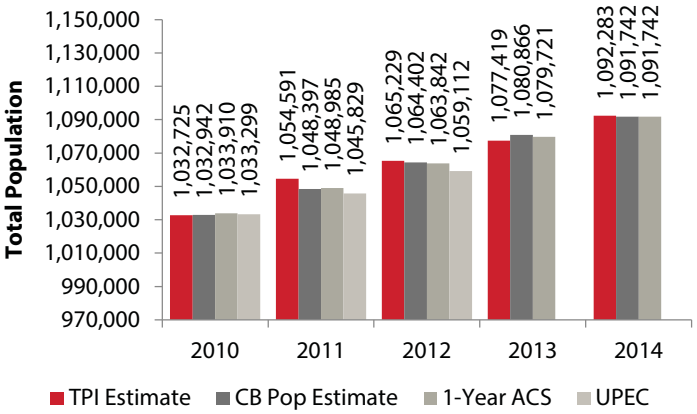
While there are no single-year census tract estimates to use as small area comparison, aggregation of our tract level estimates to county totals allows comparison to county-level estimates produced by others. Population estimates are produced by the Census Bureau Population Division, the 1-year American Community Survey (ACS), and the Utah Population Estimates Committee (UPEC). UPEC discontinued production in 2013.[6]

The Census Bureau estimates and the UPEC estimates are both point-in-time estimates with a reference date of July 1. The 1-year ACS estimates are period estimates that refer to the entire calendar year. As such, the ACS estimates are not directly comparable to our result estimates, which are point-in-time, July 1 estimates. It should be noted that the Population Division and 1-year ACS estimates are not independent of each other. The ACS is adjusted to the county total population estimate produced by the Population Division (U.S. Census Bureau, 2014, p.16) Because the ACS population estimates have been adjusted, reporting confidence intervals for total population estimates is not appropriate.

Total Population

The Kem C. Gardner Policy Institute (TPI) estimate of total population is below the comparable estimates in some years and above in others (Figure 4). For the July 1, 2010 estimate, the TPI estimate is lower than all three comparable estimates. For 2011, the TPI estimate is higher than the other estimates by several thousand people. The 2011 estimate exceeds the

Figure 4
Comparison of Estimates: Total Population



Sources: (U. S. Census Bureau, 2015b) (U. S. Census Bureau, 2014b) (Utah GOMB, n.d.)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. CB is the U.S. Census Bureau Population Division. UPEC is the Utah Population Estimates Committee. ACS is the American Community Survey.

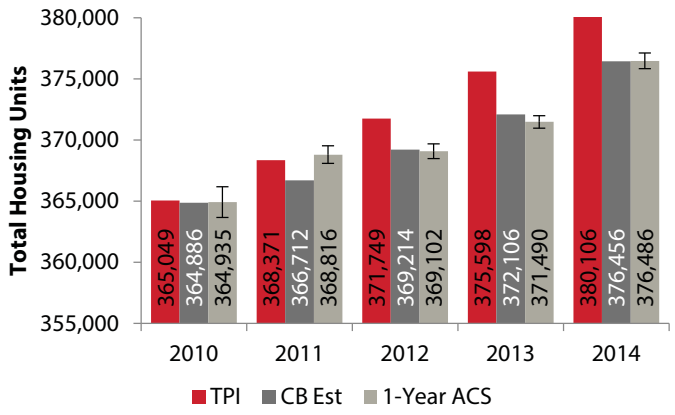
6 DemographyUTAH Population Committee was formed and convened as a new population estimation work group in December 2015 to produce county level postcensal estimates. These estimates will become Utah's Official State-produced population estimates.

Census Bureau by 6,194, the 1-year ACS by 5,606, and UPEC by 8,762. The 2012 estimate is also higher than the other sources, but the differences are smaller than in 2011. UPEC stopped producing population estimates after the release of the 2012 estimates. For 2013, the TPI estimate is lower than Census Bureau and ACS estimates by 3,447 and 2,302. In 2014, the TPI estimate exceeds both the Census Bureau and ACS estimates by 541 people.

Housing Units

Housing unit estimates are available from the Census Bureau and the 1-year ACS, but not from UPEC (Figure 5). Our (TPI) housing unit estimate is higher than the Census Bureau every year, by 163 units in 2010 to 3,650 units in 2014. The TPI estimate is higher than the 1-year ACS estimates for every year except 2011, ending at 3,620 units above the ACS in 2014.

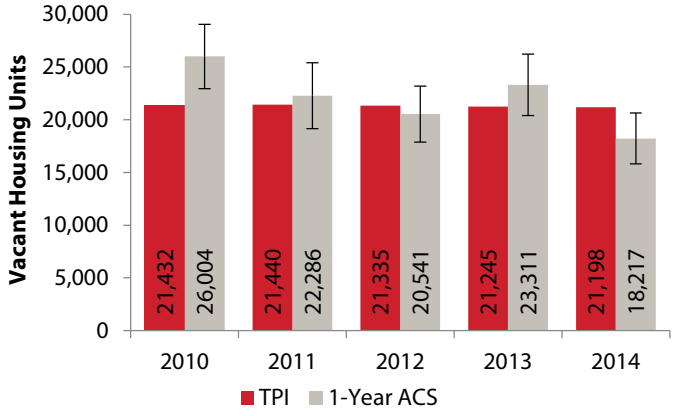
Figure 5
Comparison of Estimates: Housing Units



Sources: (U. S. Census Bureau, 2015a) (U. S. Census Bureau, 2014a)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. CB is the U.S. Census Bureau Population Division. ACS is the American Community Survey. The margins of sampling error (90 percent confidence interval) of the ACS estimates are shown in the graphic. The margins of sampling error by year are: 2010: ±1,252; 2011: ±726; 2012: ±600; 2013: ±518; 2014: ±630.

The ACS is the only source for estimates of occupied and vacant housing units. As mentioned, ACS estimates are period estimates and not directly comparable to the TPI point in time estimates. A comparison of vacant units is shown in Figure 6. The TPI estimate of vacant units in 2010 was below the ACS estimate, even considering margins of error. However, the TPI estimate is much closer to the Census 2010 value of 21,409 than is the ACS. As the TPI estimate is made only 3 months following the Census enumeration, this is a more appropriate 2010 comparison than is the ACS calendar year estimate. In 2011, 2012, and 2013, our (TPI) estimated vacant housing units are within the 90 percent confidence range of the ACS estimate. In 2014, however, the TPI estimate is higher than the

Figure 6
Comparison of Estimates: Vacant Housing Units

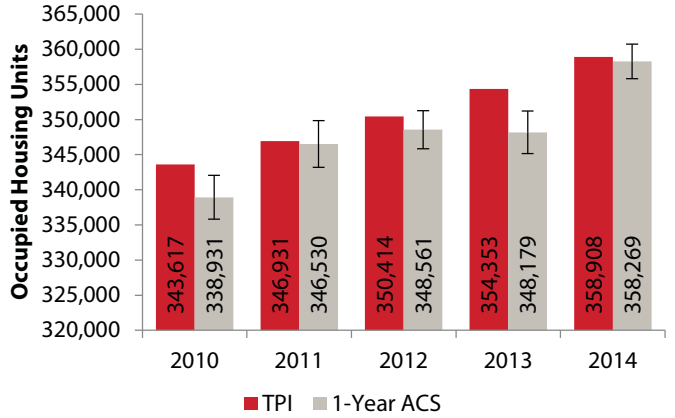


Source: (U. S. Census Bureau, 2014a)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. ACS is the American Community Survey. The margins of error (90 percent confidence interval) of the ACS estimates are shown in the graphic. The margins of error by year are: 2010: ±3,052; 2011: ±3,122; 2012: ±2,663; 2013: ±2,903; 2014: ±2,416.

ACS estimate and margin of error range. The TPI estimate is nearly 3,000 units above the 2014 ACS estimate of vacant units, though just 565 units above the upper end ACS estimate.

Occupied housing units and households are equivalent terms in this work. As with total housing units, the TPI estimate of occupied housing units (and therefore households) exceeds the ACS estimate for every year (Figure 7). 2011, 2012 and 2014 are within range once the margins of error are considered. The 2010 and 2013 estimates are higher than the ACS estimate and

Figure 7
Comparison of Estimates: Occupied Housing Units

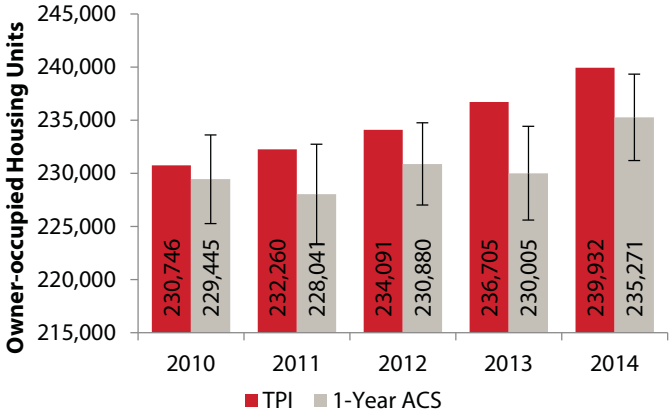


Source: (U. S. Census Bureau, 2014a)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. ACS is the American Community Survey. The margins of error (90 percent confidence interval) of the ACS estimates are shown in the graphic. The margins of error by year are: 2010: ±3,109; 2011: ±3,316; 2012: ±2,708; 2013: ±3,009; 2014: ±2,447.

exceed the 90 percent confidence intervals. One explanation for these differences is that TPI may have incorporated more units through our permit data source and primary data collection than did the ACS estimates. By the July 1, 2014 estimate, the estimated number of occupied housing units is within the confidence interval of the 2014 ACS.

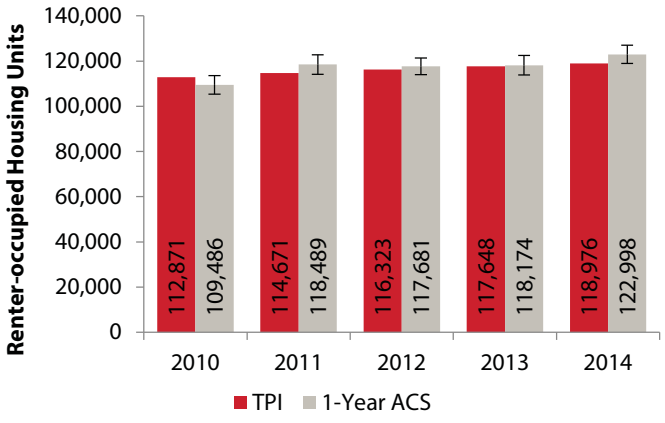
Owner-occupied units are also estimated higher than the ACS, and exceed the upper end of the ACS margin of error range in 2013 and 2014 (Figure 8). In these years, the TPI estimates are about 6,700 and 4,700 units over the ACS estimates. Estimates of renter-occupied units are above the ACS in 2010 and lower than the ACS in 2011-2014, yet all estimates fall within the 90 percent confidence interval ranges (Figure 9). The 2014 TPI estimate of renter-occupied units is 4,022 units below the ACS estimate, just outside the ACS margin of error range of ±3,988 units.

Figure 8
Comparison of Estimates: Owner-occupied Housing Units



Source: (U. S. Census Bureau, 2014a)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. ACS is the American Community Survey. The margins of error (90 percent confidence interval) of the ACS estimates are shown in the graphic. The margins of error by year are: 2010: ±4,171; 2011: ±4,688; 2012: ±3,864; 2013: ±4,406; 2014: ±4,056.

Figure 9
Comparison of Estimates: Renter-occupied Housing Units

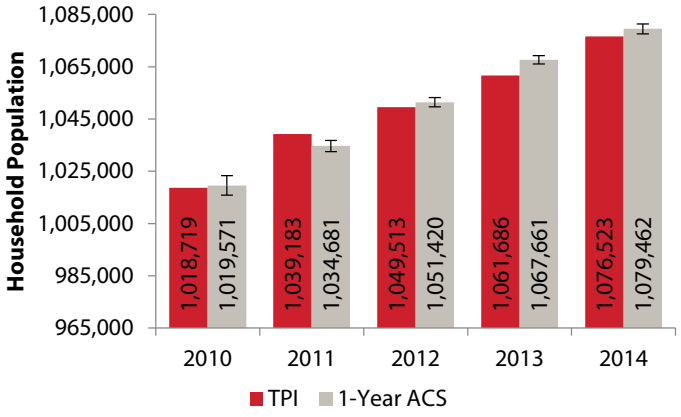


Source: (U. S. Census Bureau, 2014a)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. ACS is the American Community Survey. The margins of error (90 percent confidence interval) of the ACS estimates are shown in the graphic. The margins of error by year are: 2010: ±4,134; 2011: ±4,301; 2012: ±3,741; 2013: ±4,301; 2014: ±3,988.

Household and Group Quarters Populations

Household population estimates are only available from the ACS. The TPI household population estimate is below the ACS estimate for every year except 2011. The 2010 TPI estimate is within the ACS margin of error range. The 2011 TPI estimate is 4,502 people above the ACS, which is outside the margin of error range of ±2,174. In contrast to 2011, the 2012-2014 estimates are lower than the ACS. The differences between the TPI and ACS estimates in 2012-2014 are greater than the ACS error margins. The 2014 estimate is about 3,000 people below the ACS estimate.

Figure 10
Comparison of Estimates: Household Population



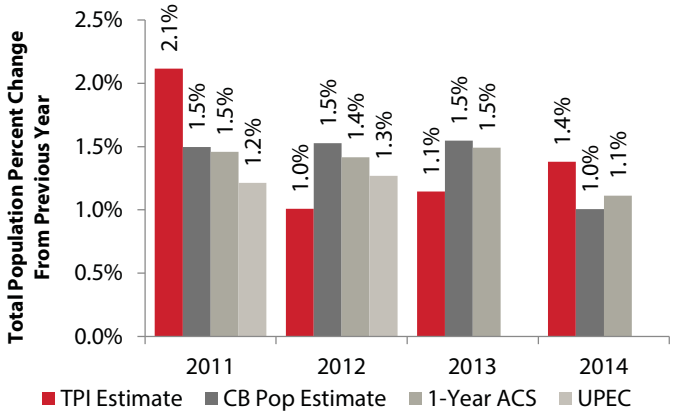
Source: (U. S. Census Bureau, 2014c)Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. ACS is the American Community Survey. The margins of error (90 percent confidence interval) of the ACS estimates are shown in the graphic. The margins of error by year are: 2010: ±3,109; 2011: ±3,316; 2012: ±2,708; 2013: ±3,009; 2014: ±2,447.

Our July 1, 2010 and July 1, 2011 group quarters population estimates are 14,006 and 15,408 respectively. These estimates are within the margin of error ranges of the ACS. In contrast, our group quarters estimates for the three following years (15,716, 15,733, and 15,760 respectively) exceed the ACS estimates and fall outside their reported margins of error. The ACS estimates successive annual declines in group quarters, while we estimate increases each year. The July 1, 2014 TPI estimate of the Salt Lake County group quarters population is 15,760, which exceeds the ACS estimate by 3,480 people.

Annual Rate of Change

Annual rates of change in total population also differed in the various estimates series, with TPI estimates of change rates above other estimates in some years, and below in other years (Figure 11). The largest relative difference in annual rates of change occurred between the 2010 to 2011 (July to July) estimates. We (TPI) estimated a 2.1 percent increase, exceeding

Figure 11
Comparison of Estimates: Total Population Percent Change from Previous Year



Source: (U. S. Census Bureau, 2015b) (U. S. Census Bureau, 2014b)
Note: TPI indicates the estimate produced by the Kem C. Gardner Policy Institute. CB is the U.S. Census Bureau Population Division. ACS is the American Community Survey. UPEC is the Utah Population Estimates Committee.

all other estimates. Our estimated growth rates for 2011 to 2012 (1.0 percent) and 2012 to 2013 (1.1 percent) are below the other estimates. Our 2013 to 2014 growth rate (1.4 percent) is above the other estimates once again. We estimate that the cumulative percent change in the Salt Lake County population from the 2010 Census to the July 1, 2014 was 6.1 percent. This is slightly above the Census Bureau's estimate of 6.0 percent.

Methodology

The housing unit method is a comprehensive method for estimating postcensal population for a specific geographic area. As explained by Swanson and Tayman (2012), the method "is based on the fact that almost everyone lives in some type of housing structure, whether a single family unit, an apartment, a mobile home, a college dormitory, or a state prison" (p.137). At the aggregate level, the housing unit method defines the population of a given area at a specific point in time according to the equation:

$P_t = (H_t \times PPH_t) + GQ_t$

Where:

P_t is total population at time t
H_t is the number of households at time t
PPH_t is persons per household at time t
GQ_t is the group Quarters Population at time t

Population refers to residents. A household is an occupied housing unit. The population of the household includes people living alone or with others (family or nonfamily). Occupant(s) of a housing unit have living quarters separated from neighboring housing units. Group quarters are living quarters in which people live together in a group setting and where owners provide services for residents. Examples include homeless shelters, college dormitories, and correctional facilities. This equation is based on a similar equation shown in Swanson and Tayman (2012).

Ideally, if these three components (households, persons per household, and group quarters populations) are precisely known, the exact population of a location at a given point in time can be calculated with ease. After each decennial count, postcensal estimates are developed using various data sources and techniques. The housing unit method offers the benefit of flexibility in lending itself easily to different techniques, refinements, and data sources (Swanson & Tayman, 2012). The Kem C. Gardner Policy Institute utilized the disaggregated housing unit method to develop small area (census tract) population estimates for Salt Lake County for July 1 of each postcensal year from 2010 to 2014.[7]

The basic technique of the housing unit method is very simple. The starting point of the method is the beginning stock of housing units or total housing units in a given area at a given point in time. The next step is to estimate the number of households. A housing unit becomes a household only when occupied. In this set of estimates, the number of occupied housing units equals the number of households. This also applies in Census 2010 data. The number of households are multiplied by the average persons per household, which varies by household tenure, to estimate the household population. Finally, the group quarters population is added to the household population to arrive at the total population estimate.

The total housing units for Salt Lake County were determined by taking 2010 Census data as initial conditions and utilizing time series proprietary building permit data in the subsequent years. The initial stock of housing units is determined by the April 1, 2010 Census count. Building permit data from Construction Monitor, a company that performs ongoing collection of permit data, were analyzed, geocoded, and used to estimate the annual changes in housing units ("Construction Monitor," n.d.). Because Census 2010 is as of April 1, permits estimated to become occupied in April, May, or June 2010 were used to bring the Census data up to the July 1, 2010 population estimate. Later estimates were also made as of July 1, and were produced each year from 2011 through 2014. Assumptions

7 All estimations were conducted at the census tract level. The final estimate sums all census tracts in Salt Lake County.

about time lags in the completion of the units and occupancy by households are explained in the upcoming Assumptions and Adjustments section.

For the July 2010 estimates, the newly constructed occupied housing units were added to the Census 2010 occupied housing units in each tract. The number of households was then multiplied by the tract's 2010 persons per household (by tenure) to estimate the July 1, 2010 household population for the tract. Finally, tract level group quarters populations were added to the tract level household population estimates to arrive at the 2010 total population estimate for all tracts in Salt Lake County. For this July 1, 2010 estimate, the group quarters populations were held constant at Census 2010 levels.

All July 1 estimates beyond 2010 are created with a similar procedure to that used for July 1, 2010. One difference is that they utilize a full year of building permit data and associated new construction rather than three months. These subsequent estimates also incorporate updates to average persons per household and group quarters populations.

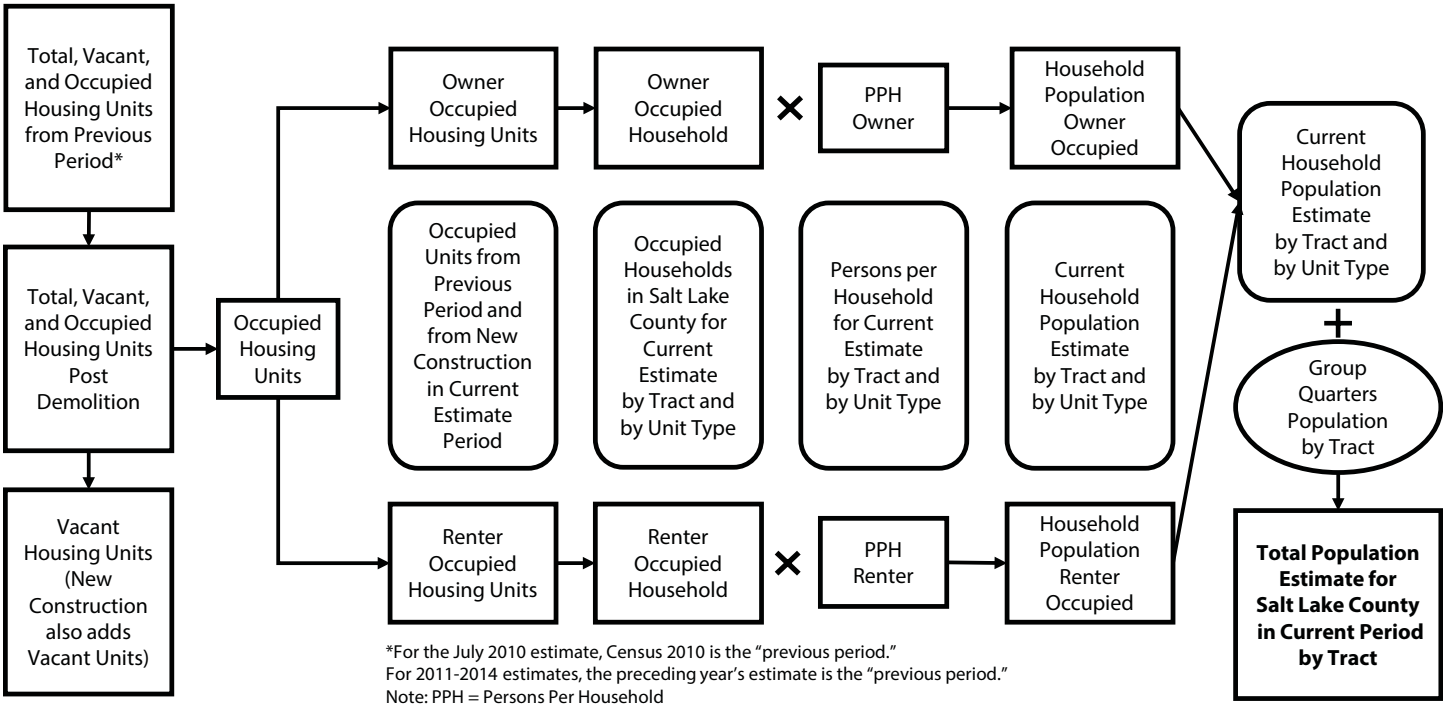
The July 1, 2011 population estimate process will be described for illustration. For 2011, the number of occupied housing units found in the July 1, 2010 estimate was used as the benchmark. Analysis of building permit data, explained below, resulted in an estimate of new construction. New dwelling units built and occupied July 2010 through June 2011 accounted for the units added since the 2010 estimate. We apply assumptions, explained in the Assumptions and Adjustments section, about the shares of these new units that become occupied units. Adding the existing and new occupied units yielded the occupied housing units by tract for July 1, 2011. The occupied housing units were then multiplied by persons per household (by tenure) for the year 2011, generating the household population estimate. An updated group quarters population was added to the household population to produce the 2011 total population estimate by tract for Salt Lake County. Persons per household and group quarters population adjustments are also explained in the Assumptions and Adjustments Section. The same technique was used to generate population estimates for 2012 through 2014. Figure 12 contains a graphical rendition of the method.

Assumptions and Adjustments

Times of Construction and Occupancy

The housing unit method is based on analysis of building permit data. Implementation of the method requires assumptions about the share of the permits that result in construction, the share of the new units that are occupied, and the lag times between permitting, construction, and occupancy. Construction Monitor is a proprietary source of building permit data. This data set contains one record for each building permit issued. Each record contains the permit's date of issue, the

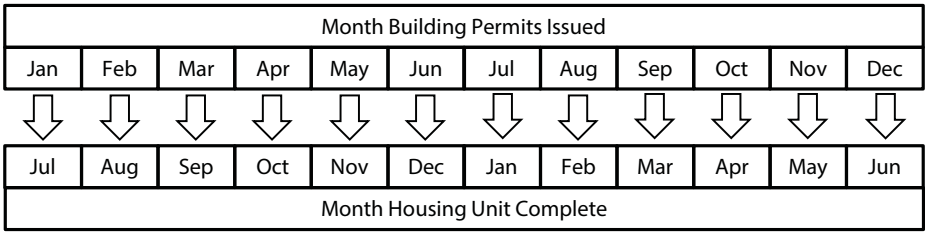
Figure 12
Housing Unit Method Flowchart



Source: Kem C. Gardner Policy Institute.

location of the construction, and details about the project. No dates of construction completion or occupancy are provided. We assume that construction occurs for all permits issued. For structures which become occupied, we also assume no lag time between completion and occupancy. In our work we used a lag of six months to represent the timing of both the construction and occupancy of most structures. For example, a permit issued in July 2010 is considered occupied in January 2011, and its new occupants will be counted in the 2011 estimate. A permit issued in February 2011 is considered occupied in August 2011. Its occupants will be counted toward the 2012 estimate.[8]

Figure 13
Permit Date and Completion Using Six-Month Lag



Date of Estimate	Date of Building Permits
July 1, 2010	Census + Oct, Nov, Dec 2009
July 1, 2011	CY 2010
July 1, 2012	CY 2011
July 1, 2013	CY 2012
July 1, 2014	CY 2013

Source: Kem C. Gardner Policy Institute

The six month lag from permitting to occupancy is a general assumption, but one informed by other sources. In reality, some structures will be completed and occupied in less than 6 months, and others in more. The six month lag is intended as an average of this variation. The Census Bureau's Survey of New Residential construction provides average times of authorization (permitting) to start of construction, and start of construction to completion. In 2012, 1-unit buildings in the West region averaged 0.8 months from authorization to start, and 6.1 months from start to completion (U.S. Census Bureau, n.d.-a and n.d.-b). Data for other years covered in our estimates are similar. Buildings with two or more units take longer on average, but permit data show that they are also a much smaller percentage of Salt Lake County's new construction.[9] Based on these findings, and consultation with our in-house expert on housing, real estate, and construction, we deem our assumption to be appropriate.[10]

The set of building permits required for an estimate varied depending on the estimate year. As the July 2010 population estimate is only three months later than the 2010 Census, a count was only needed for new household populations appearing in April, May and June 2010. Assuming a six-month lag, these populations come from permits issued in October, November and December 2009. For later estimates, the full year is needed, or new population from July of the previous year through June of the estimate year. For example, population added by new construction for the 2011 estimate is gained in July 2010 through June 2011. The permits for these new units are issued during the 2010 calendar year: January 2010 through December 2010. Refer to the permit date and occupancy chart (Figure 13).

The construction timeline was adjusted for large multi-unit structures, for which a six-month lag is far too short a timeline. A large apartment complex may not even begin construction until several months after its permit date, or even later. For example, the Census Bureau's Survey of New Residential Construction shows that in the West in 2012, 47 percent of buildings with 20 or more units took two months or more from permit authorization to the start of construction, compared to just 12 percent of 1-unit buildings (U.S. Census Bureau, n.d.-b). The same year, buildings with 20 or more units in the West region averaged 2.1 months from authorization to start, and 12.9 months from start to completion. These averages clearly exceed those for 1-unit structures (0.8 and 6.1 months) (U.S. Census Bureau, n.d.-a and n.d.-b).[11] In Salt Lake County, large multifamily complexes were of particular importance. To account for longer construction times, we implemented different lags for projects with 100-199 total units and those with 200 or more total units. For those sized 100-199 units, a one-year lag was implemented. The 14 projects in this range in Salt Lake County were individually researched to best estimate the completion of construction and arrival of occupants, based on available information. The one-year lag provided appropriate average timing for these complexes.

Permits or projects with 200 or more units were expanded to an 18-month lag which introduced occupants in four phases. This affected 16 projects in Salt Lake County which had at least a portion of occupants added following the 2010 Census up to the 2014 estimate. The 18-month lag assumed no occupants for the first six months after the permit date. Nine months after the permit date, 25 percent of units are considered built and ready

8 Vacant structures follow the same time lag for construction, but do not become occupied.

9 Though buildings with 100 or more units form a large share of Salt Lake County construction, buildings with 2 to 99 units form a comparatively smaller share.

10 James A. Wood serves as the Ivory-Boyer Senior Fellow within the Kem C. Gardner Policy Institute. He has, over a four decade career, researched and published extensively on Utah's construction and real estate sectors. See Wood (2014) and Wood et al. (2014).

11 Other implementations of the housing unit method have also used longer lags for multifamily structures, such as Smith and Cody's (2004) "An evaluation of population estimates in Florida: April 1, 2000" (as cited in Swanson & Tayman, 2012, p.142)

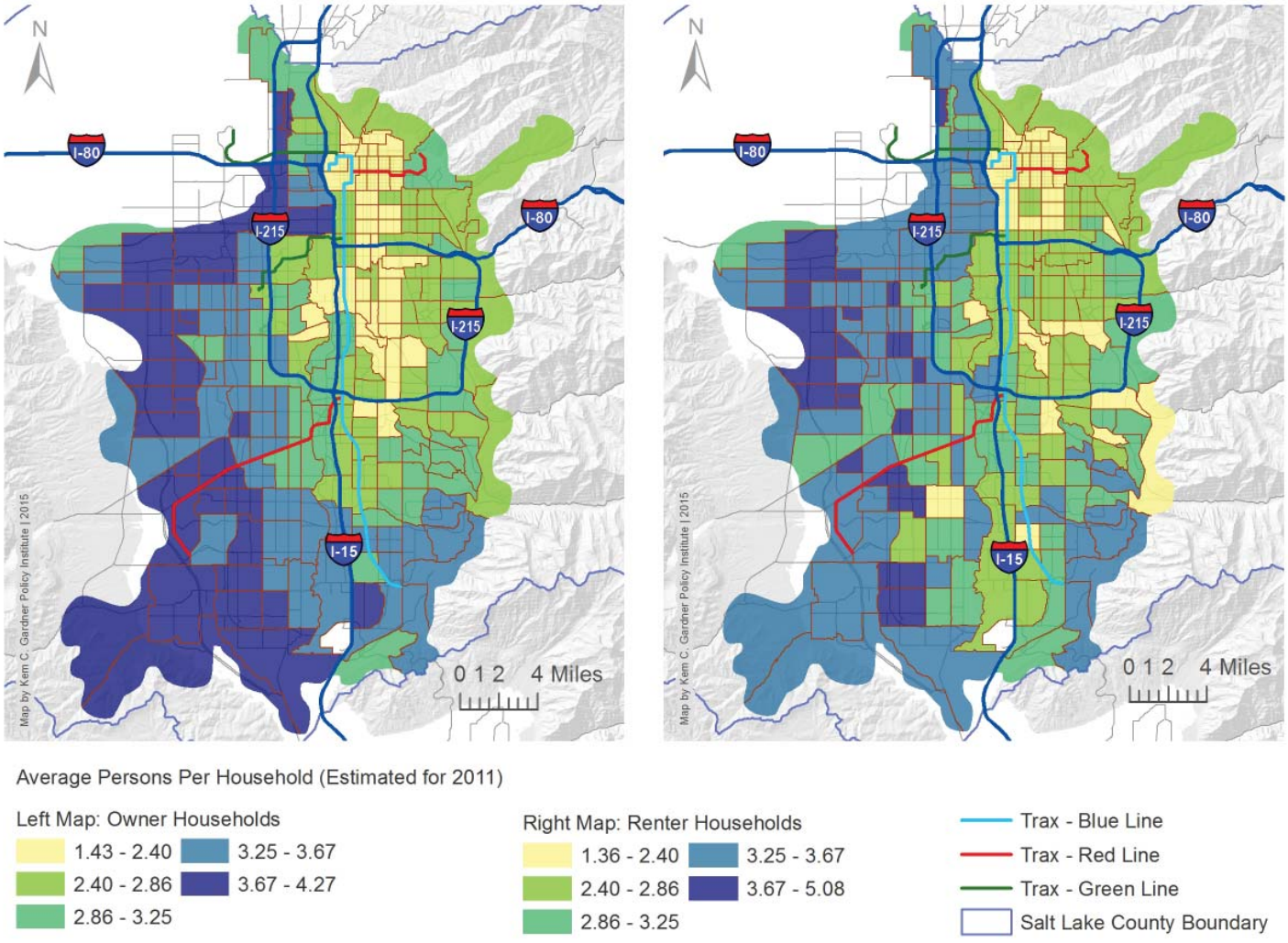
for occupancy. Twelve, fifteen, and eighteen months after the permit date, another 25 percent of units, and their respective occupants, are added each time. The result is a more realistic introduction of population to these large complexes, which are usually comprised of multiple buildings where residents are introduced gradually. As with the 100-199 unit structures, the permit date for 200+ unit structures was altered to best match available information on the completion of these complexes.

Household Size (Persons per Household)

In our analysis, household sizes vary by location, time, and housing unit tenure. The 2010 Census offers tract-specific calculations of the average number of people per household for housing units in general as well as for owner-occupied and renter-occupied units. These values are available at a tract level from the American Community Survey, but only as 5-year period estimates. The 2009-2013 tract estimates were the most current data at the time of our model development. Tract level data for the individual years following the Census is not available. The ACS provides 1-year estimates of average household size at the county level, which serves as the best indication of year-by-year changes in average household size after the 2010 Census. The ACS reports rising persons per household for Salt Lake County. Following 2.96 at the 2010 Census, the average rose to 2.99 (2011), 3.02 (2012), and 3.07 (2013) for total housing units. Renter-occupied units held fewer people per household than owner-occupied units, as is typical, but both renter and owner-occupied units grew in average size in Salt Lake County. 2014 data was not available at the time of our model development.

Some of the ACS increases from one year to the next are not statistically significant, but the increases from the census to the

Figure 14
Persons Per Household 2011



Source: Kem C. Gardner Policy Institute using Census 2010 and ACS 2011 data (U.S. Census Bureau, 2014a and 2014b).

most recent survey data from 2013 were significant, providing evidence of increasing persons per household at the county level. Because the ACS estimates have margins of error and the actual variation in persons per household at the tract level are unknown, our method incorporates increases based on the county increase from the 2010 Census to the 2011 ACS data. This increase is much more modest than a jump to the 2012 or 2013 estimates of persons per household.

To incorporate growth in average household size, the Census 2010 to ACS 2011 county rate of increase in owner and renter persons per household was applied to each tract. In Salt Lake County, owner households had an average household size of 3.13 in the 2010 Census, and increased to 3.15 in the 2011 ACS. Renter households increased from 2.63 to 2.66. The ratios and resulting estimates were calculated for both owner-occupied and renter-occupied units using percentage proportioning. For example, the average persons per household in owner-occupied units in 2011 was 1.009 times the Census 2010 average, at the county level. To determine tract level 2011 persons per household, the Census 2010 value of average persons per household in owner-occupied units—provided for each tract—was multiplied by that rate. This new tract value was then used to determine the likely population living in each household for the entire occupied housing stock, whether a new or existing unit.

Housing Unit Tenure

Owner and renter status is not directly known for new construction, but was inferred using the number of units in the permit. A permit with 1 to 11 units is classified as owner-occupied. A permit with 12 or more units is classified as renter-occupied. The classification of tenure matters most for the persons per household assumption that will correspond to the tenure classification. While there are certainly single family homes, duplexes, or other 1 to 11-unit properties that are occupied by renters, the average persons per household for these homes tend to be more similar to the average household sizes of owner-occupied units. It is appropriate that an owner average be applied—an average which, for most tracts, is larger than the renter-occupied average.

Occupancy and Vacancy

Occupied and vacant housing unit information for each tract begins with the totals provided in the 2010 Census. In this dataset, units which may be vacant units are classified as follows: for rent (including units that are for rent or for sale); rented, not occupied; for sale only; sold, not occupied; for seasonal, recreational, or occasional use; for migrant workers; and other vacant (U.S. Census Bureau, 2012).

In our work, the estimated number of vacant units may change due to new construction or demolition. When units are added through new construction, 99 percent of owner units and 97 percent of renter units are classified as occupied. The remaining 1 percent of owner units and 3 percent of renter units are added to the tract as vacant units. These units are likely for sale or for rent and not yet occupied.

These high occupancy and low vacancy assumptions for new construction are supported by evidence of the strength of the Utah construction market. For our estimate period, builders in Utah typically constructed only if they were confident they had a buyer. The 3 percent vacancy rate in renter units implies that while most units in new complexes will become occupied, a few openings will be present due to a normal level of renter turnover.[12] Because the renter-occupied housing stock at the 2010 Census includes all renter units (not only apartment units), the vacancy of all renter units, old and new, was not altered to match a 3 percent vacancy target. However, we introduced this lower vacancy level through new units. The net result of applying lower vacancy on new construction, both owner and renter, resulted in annual decreases in the aggregate countywide vacancy rates for all housing units.

Demolition reduces vacant housing units in our method. We assume that vacant units are demolished before occupied units. Only a high-demolition area may have occupied housing units demolished as well. This does not imply that houses were demolished while actually occupied. Rather, the once-occupied housing unit became vacant during the estimate period and was then demolished in the same period. Only two tracts experienced decreases in occupied units due to high demolition: Tracts 1133.10 and 1134.09 of West Valley City. Demolitions in these tracts were done to provide space for the Mountain View Corridor.

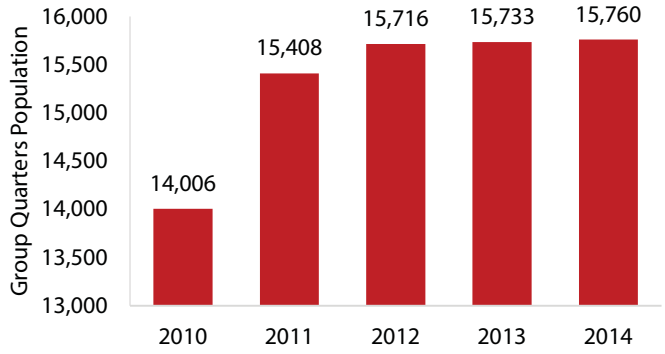
As discussed, our method changes vacant units in two ways: 1) vacant units may be increased through new construction and 2) vacant units may be reduced through demolition. No further adjustments were made to vacant units in the method. Limited information is available about changes in vacancy since the 2010 Census. As discussed in the comparison section, the vacant units resulting from our estimates fall within range of the margins of error reported for American Community Survey estimates in 2011, 2012, and 2013. The 2014 estimates were not available during the time of our model development, but suggest a lower vacancy than was reflected in our July 2014 estimate.

Group Quarters

In 2010, the group quarters population of each tract was held constant with the 2010 Census figures. In 2011-2014, the Kem C. Gardner Policy Institute updated the group quarters

12 A report released by Commerce Real Estate Solutions and conducted by James A. Wood places countywide apartment vacancy at 3 percent (Commerce Real Estate Solutions, 2014).

Figure 15
Salt Lake County Group Quarters Population



Source: Kem C. Gardner Policy Institute
Note: The July 2010 estimate of group quarters population was held constant to Census 2010.

population, adding increases in the University of Utah and Westminster College dormitories and the Salt Lake County Jail. We contacted institutions and collected primary data to update this information. The source(s) of the data is discussed in the Data and Geocoding section of this discussion.

In 2011, we began updating the group quarters population. The University of Utah dorm population increased from 1,264 at Census 2010 to 2,392 in 2011 (89%). During the same period, the Westminster College dorm population increased from 497 to 648 (30%), and the Salt Lake County Jail added 123 people (up 5 percent from 2,296 at Census 2010).

Demolitions

We subtracted housing units demolished since the last estimate period from total housing units for each estimate. Demolitions are assumed to be completed six months after the demolition permit date. A total of 557 housing units were demolished during the estimate period of this study. Table 5 shows the number of demolitions applied to each estimate.

Table 5
Demolitions

Estimate	Demolitions*
July 1, 2010	1
July 1, 2011	63
July 1, 2012	198
July 1, 2013	171
July 1, 2014	124
Total	557

**Based on available data*
Source: Kem C. Gardner Policy Institute Research

Note that these numbers are based on incomplete data and may not reflect actual demolition trends in Salt Lake County. The data section of this paper provides detail on the collection of demolition data.

Data and Geocoding

Building permit data were downloaded from Construction Monitor, a company which performs ongoing collection of permit data from city and county building departments across the United States ("Construction Monitor," n.d.). Over 8,700 permits of relevant construction type were reported in Salt Lake County from October 2009 through December 2013. Key data elements included in permit data are the construction type, permit description, number of units in the structure, date of permit and the site address information. The housing unit method employed permits for the construction type categories of single family homes, apartments and condos, and duplexes and twin homes.

Construction Monitor building permit data are not necessarily comprehensive, but the company is based in Utah and seeks to maintain 90 percent coverage of all U.S. permits. The number of units associated with the permit is not reported for many permits, including the numbers of units in many multi-household construction projects. Zip codes are also frequently unreported, and addresses are at times incomplete or misreported. There are several duplicated permits.

We conducted additional research to address many of these issues. Specifically, we conducted primary research to make sure that we included major multifamily structures that were omitted in the Construction Monitor data, corrected the number of units in the structures, and verified their completion. We also collected our own initial list of multifamily construction in Salt Lake County.

In order to analyze housing unit changes at a census tract level, permits required geocoding. Geocoding is the process of assigning an address to geographic coordinates on a map. Following geocoding, permits were assigned a 2010 census tract, which allowed the point data to be assigned to tract level aggregations of housing units.

Several methods were implemented to geocode permit addresses. The first was an address points dataset provided by the Utah Automated Geographic Reference Center (AGRC) (Utah AGRC, 2015a) This geographic information system (GIS) data layer contains attributes and locations for every Utah address. In cases when the permit data address was aligned with an address present in the AGRC address points dataset, the point location was used. Two batch address locators provided by AGRC were used next: an address points locator and a roads address locator.[13] These GIS tools map an address based on statewide information and report a 0 to 100 score for how well the input address information matched to known addresses. We used match scores, zip code, and county assignment from the address locator output to determine accuracy of the geographic coordinates given by the tool.

Remaining points were matched manually using the AGRC address locator tools and Google Maps. Permit data and all

13 Locator_AddressPtsAddrSys.loc and Locator_RoadsAddrSys_COMPOSITE.loc (Utah AGRC, 2015b).

location information received by geocoding resources were stored in a secured database. We use a PostgreSQL database which offers storage, data manipulation, and download of permit data with key location data included.

Group Quarters

The U.S. Census Bureau categorizes group quarters into institutionalized and noninstitutionalized populations. Institutionalized population includes correctional facilities for adults and juveniles, nursing facilities, and other long-term healthcare facilities. Noninstitutionalized population includes college dormitories, homeless shelters and residential treatment centers (U.S. Census Bureau, 2012). The 2010 Census reported a total of 14,006 individuals housed in group quarters in Salt Lake County. However, updates to the population in university and college dormitories and the Salt Lake County jail brought the group quarters population to an estimated 15,760 in 2014. Primary data collection efforts included contacting each of the major group quarter facilities: the Utah State Prison, the Salt Lake County Jail system, homeless shelters, college dormitories, and nursing/rehabilitation facilities.

Demolition Data

Each of the 16 municipalities, as well as unincorporated areas of Salt Lake County, collects demolition permits for all residences torn down within their respective jurisdictions. Demolition data collected in each of the municipalities is stored in a variety of formats. In this research we contacted each municipality's building or zoning department. Nine of the sixteen municipalities and unincorporated Salt Lake County provided demolition data.

A total of 502 permits, representing 557 demolished units, was applied to the appropriate estimation period. Several permits included two or multiple units included in the demolition; however, nearly all were single family dwellings. Permits outside the required date range, duplicate permits, mobile home demolitions, and a permit marked as an interior project were not used. Of the permits used, 166 permits came from West Valley City, 136 permits from unincorporated areas of Salt Lake County, 74 from Taylorsville and 126 from other cities, including Bluffdale, Herriman, Midvale, Murray, Salt Lake City, Sandy, Taylorsville and West Jordan.

As with new construction, a six month lag from the permit issuance date was employed, meaning that demolitions are assumed to be completed six months after the permit date. Eight permits had no date information included. The 136 permits from unincorporated county areas had only a permit year provided, but no month. Where no date was included, the permits were first assigned a year according to the year distribution of the demolition permits that did report at least a year. Establishing a month of demolition was performed in similar fashion, using the distribution of permits by month for each year.

All demolition permits were reported with zip codes, which facilitated the geocoding process. The address locator from the Utah AGRC was used to map the demolitions and determine the census tract in which the demolition occurred.[14] Those that did not match strongly were individually reviewed. Google Maps was used to determine a latitude and longitude of the correct location.

Limitations

This work is not without limitations. In order to get the necessary data at small geographies, we occasionally needed to make various assumptions and adjustments, which have been detailed previously in the document. Also, the data, including the primary data we collected are subject to measurement and coverage error. We could not obtain complete data for some geographies, and the housing unit method will not measure those who do not live in a housing structure or group quarters setting. We recognize that our method does not account for births, deaths, or other factors directly influencing persons per household, a deficiency that could potentially be addressed in future efforts. Because our analysis is based upon a (nearly) complete accounting of the necessary model inputs, we do not have confidence intervals to report. However, our assumptions regarding persons per household are based upon ACS samples, which do have sampling error built in. Though several limitations exist, we believe these potential drawbacks are relatively minor, particularly in consideration of the benefits these estimates offer. We also found that, when summed to the county level, our estimates were fairly close to those provided by the Census Bureau and UPEC. As better data become available in the future, we hope our estimates can be further refined to obtain as accurate representation of the resident population as possible.

Conclusion

The DemographyUTAH Population Committee voted to approve these estimates in December of 2015. The Kem C. Gardner Policy Institute applied the housing unit method and was informed by the variability of known tract level characteristics. The results of the analysis provide housing unit and population changes that have occurred in each census tract since the 2010 Census. Such tract-level estimates for Salt Lake County have not been previously available, and we expect the more detailed data will help inform decisions by many parties. In general, our findings show that Salt Lake County continues to grow in population, and these people are generally living in newly constructed units. The growth is more concentrated in certain areas of the county, especially

14 Locator_RoadsAddrSys_COMPOSITE.loc (Utah AGRC, 2015b).

the southwestern region. Our adaptable method allows for reconsideration of assumptions, and we plan to apply it at other geographic levels, such as cities and towns. Further, we plan to improve data quality and refine model specifications and assumptions in future research.

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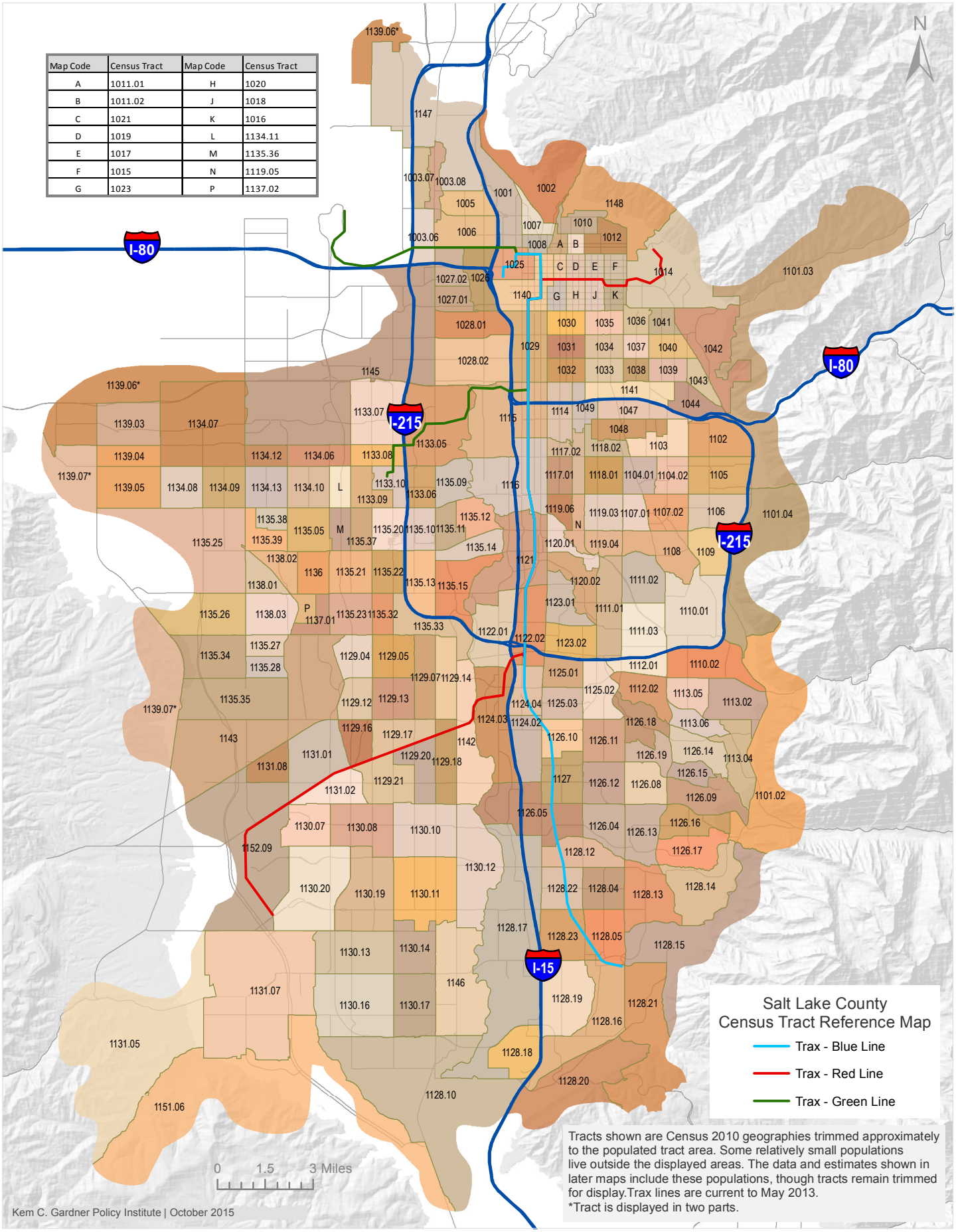
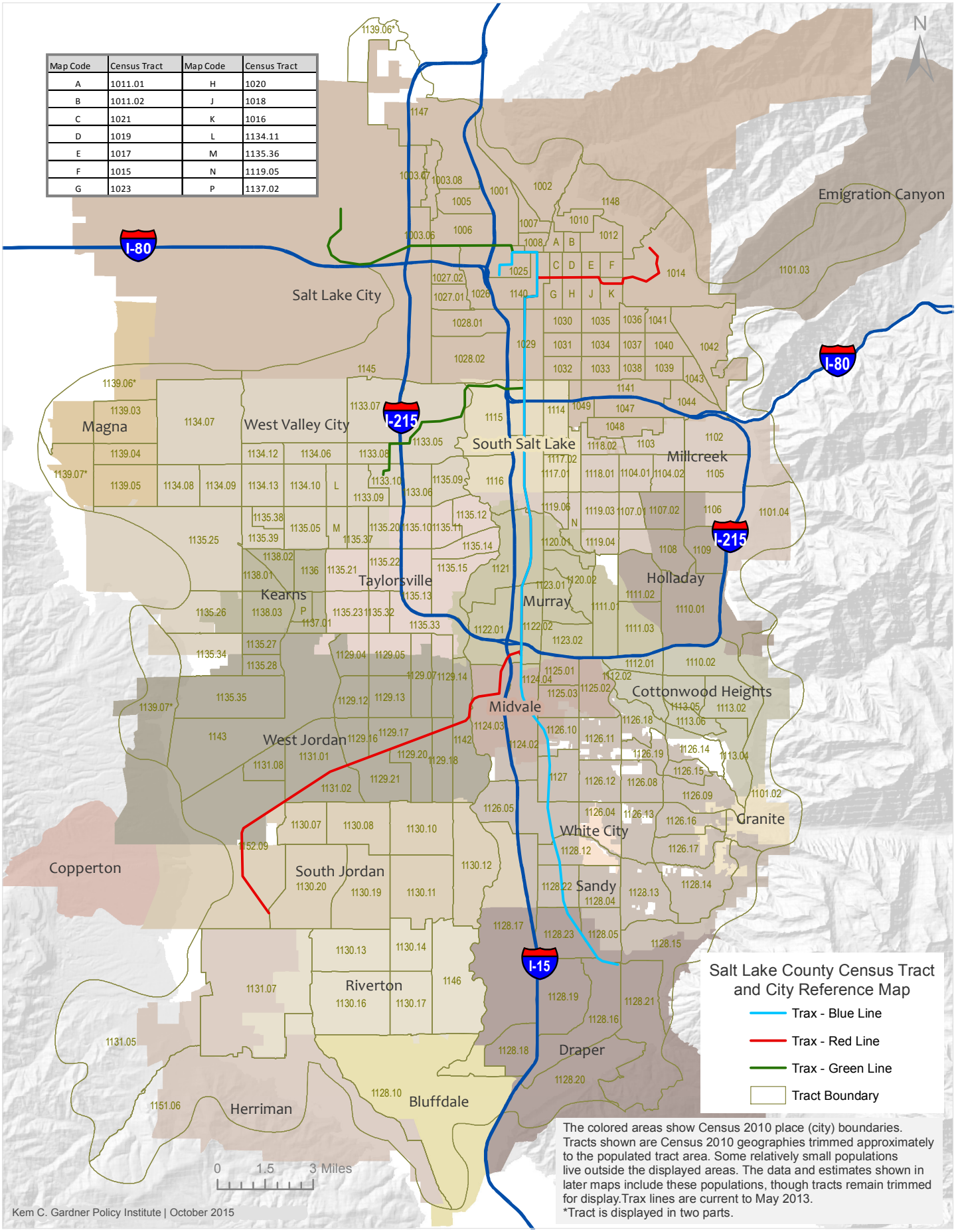
Appendix 1
Salt Lake County
Census Tract Reference Map



Appendix 2
Salt Lake County
Census Tract and City Reference Map



Appendix 3
Total Population and Change by Census Tract: 2010 Census to July 1, 2014

Salt Lake County Census Tracts	2010 Census	Population Estimates					Change from 2010 Census to July 1, 2014	
		July 1, 2010	July 1, 2011	July 1, 2012	July 1, 2013	July 1, 2014	Numeric	Percent
Tract 1001	1,529	1,529	1,545	1,728	2,078	2,078	549	35.9%
Tract 1002	1,289	1,289	1,307	1,307	1,320	1,325	36	2.8%
Tract 1003.06	5,062	5,062	5,111	5,115	5,115	5,115	53	1.1%
Tract 1003.07	5,223	5,223	5,277	5,277	5,277	5,277	54	1.0%
Tract 1003.08	4,222	4,222	4,266	4,266	4,266	4,266	44	1.0%
Tract 1005	6,379	6,379	6,443	6,443	6,443	6,443	64	1.0%
Tract 1006	6,556	6,556	6,621	6,629	6,629	6,632	76	1.2%
Tract 1007	2,704	2,706	2,736	2,736	2,736	2,736	32	1.2%
Tract 1008	2,491	2,491	2,515	2,727	2,727	2,727	236	9.5%
Tract 1010	2,959	2,959	2,990	2,990	2,995	2,995	36	1.2%
Tract 1011.01	1,969	1,969	1,989	1,991	1,991	1,991	22	1.1%
Tract 1011.02	3,422	3,422	3,458	3,458	3,458	3,458	36	1.0%
Tract 1012	3,877	3,877	3,916	3,916	3,920	3,920	43	1.1%
Tract 1014	4,816	4,816	5,983	6,264	6,278	6,258	1,442	29.9%
Tract 1015	3,214	3,214	3,246	3,246	3,246	3,246	32	1.0%
Tract 1016	3,628	3,628	3,665	3,665	3,665	3,665	37	1.0%
Tract 1017	3,534	3,534	3,570	3,572	3,572	3,572	38	1.1%
Tract 1018	3,086	3,086	3,120	3,120	3,125	3,125	39	1.3%
Tract 1019	2,497	2,497	2,543	2,549	2,808	2,913	416	16.7%
Tract 1020	2,620	2,620	2,647	2,650	2,650	2,650	30	1.1%
Tract 1021	1,457	1,457	1,574	1,749	1,867	2,037	580	39.8%
Tract 1023	2,760	2,760	2,789	2,795	2,798	2,798	38	1.4%
Tract 1025	3,460	3,460	3,487	3,487	3,561	3,795	335	9.7%
Tract 1026	4,420	4,423	4,470	4,470	4,470	4,470	50	1.1%
Tract 1027.01	5,099	5,099	5,150	5,153	5,156	5,160	61	1.2%
Tract 1027.02	3,835	3,838	3,881	3,884	3,902	3,905	70	1.8%
Tract 1028.01	6,106	6,106	6,172	6,172	6,176	6,176	70	1.1%
Tract 1028.02	5,063	5,063	5,113	5,113	5,113	5,113	50	1.0%
Tract 1029	4,500	4,500	4,547	4,547	4,568	4,568	68	1.5%
Tract 1030	2,954	2,954	2,983	3,040	3,045	3,045	91	3.1%
Tract 1031	4,163	4,163	4,205	4,207	4,207	4,207	44	1.1%
Tract 1032	4,536	4,536	4,582	4,582	4,582	4,582	46	1.0%
Tract 1033	4,267	4,267	4,456	4,601	4,736	4,782	515	12.1%
Tract 1034	4,080	4,080	4,120	4,120	4,122	4,122	42	1.0%
Tract 1035	4,045	4,045	4,090	4,090	4,097	4,097	52	1.3%
Tract 1036	2,670	2,673	2,701	2,701	2,701	2,703	33	1.3%
Tract 1037	2,581	2,581	2,606	2,606	2,610	2,613	32	1.2%
Tract 1038	2,382	2,382	2,408	2,408	2,475	2,475	93	3.9%
Tract 1117.01	5,194	5,194	5,522	5,534	5,594	5,601	407	7.8%
Tract 1117.02	4,361	4,361	4,405	4,405	4,408	4,408	47	1.1%
Tract 1039	3,786	3,786	3,823	3,825	3,828	3,828	42	1.1%
Tract 1040	3,267	3,267	3,298	3,303	3,306	3,306	39	1.2%
Tract 1039	3,786	3,786	3,823	3,825	3,828	3,828	42	1.1%

Note: Additional variables for all tracts are available online Gardner.utah.edu/utah-demographics/
Source: Kem C. Gardner Policy Institute

Appendix 3 (Continued)
Total Population and Change by Census Tract: 2010 Census to July 1, 2014

Salt Lake County Census Tracts	2010 Census	Population Estimates					Change from 2010 Census to July 1, 2014	
		July 1, 2010	July 1, 2011	July 1, 2012	July 1, 2013	July 1, 2014	Numeric	Percent
Tract 1040	3,267	3,267	3,298	3,303	3,306	3,306	39	1.2%
Tract 1041	2,968	2,968	3,002	3,002	3,004	3,010	42	1.4%
Tract 1042	6,367	6,372	6,439	6,439	6,442	6,444	77	1.2%
Tract 1043	2,821	2,821	2,849	2,852	2,852	2,852	31	1.1%
Tract 1044	2,010	2,010	2,032	2,035	2,038	2,038	28	1.4%
Tract 1047	4,774	4,774	4,820	4,823	4,823	4,823	49	1.0%
Tract 1048	5,022	5,027	5,108	5,126	5,133	5,140	118	2.4%
Tract 1049	3,147	3,147	3,193	3,195	3,200	3,200	53	1.7%
Tract 1101.02	4,427	4,432	4,487	4,495	4,514	4,534	107	2.4%
Tract 1101.03	3,620	3,623	3,661	3,667	3,675	3,691	71	2.0%
Tract 1101.04	5,288	5,296	5,350	5,356	5,361	5,377	89	1.7%
Tract 1102	5,077	5,077	5,133	5,145	5,153	5,156	79	1.5%
Tract 1103	5,477	5,477	5,535	5,543	5,548	5,550	73	1.3%
Tract 1104.01	3,476	3,476	3,510	3,510	3,513	3,518	42	1.2%
Tract 1104.02	3,653	3,653	3,696	3,701	3,704	3,710	57	1.6%
Tract 1105	6,164	6,170	6,242	6,259	6,283	6,325	161	2.6%
Tract 1106	5,376	5,379	5,434	5,437	5,457	5,462	86	1.6%
Tract 1107.01	3,628	3,628	3,667	3,667	3,681	3,686	58	1.6%
Tract 1107.02	4,896	4,896	4,951	4,951	4,965	4,990	94	1.9%
Tract 1108	5,425	5,425	5,486	5,493	5,498	5,511	86	1.6%
Tract 1109	4,562	4,562	4,616	4,625	4,637	4,669	107	2.3%
Tract 1110.01	4,470	4,470	4,523	4,535	4,566	4,598	128	2.9%
Tract 1110.02	5,659	5,659	5,714	5,714	5,714	5,714	55	1.0%
Tract 1111.01	6,279	6,279	6,386	6,424	6,429	6,443	164	2.6%
Tract 1111.02	6,104	6,104	6,170	6,172	6,208	6,217	113	1.9%
Tract 1111.03	5,903	5,905	5,970	5,992	5,997	6,006	103	1.8%
Tract 1112.01	2,761	2,761	2,788	2,788	2,788	2,788	27	1.0%
Tract 1112.02	4,687	4,687	4,733	4,733	4,733	4,733	46	1.0%
Tract 1113.02	5,979	5,979	6,035	6,035	6,035	6,035	56	0.9%
Tract 1113.04	3,676	3,676	3,710	3,710	3,710	3,710	34	0.9%
Tract 1113.05	3,872	3,872	3,909	3,909	3,909	3,909	37	0.9%
Tract 1113.06	2,536	2,536	2,561	2,561	2,561	2,561	25	1.0%
Tract 1114	6,555	6,555	6,620	6,620	6,625	6,630	75	1.1%
Tract 1115	1,794	1,794	1,819	1,819	1,833	2,080	286	16.0%
Tract 1116	7,472	7,622	8,024	7,937	8,096	8,305	833	11.2%
Tract 1118.01	5,276	5,280	5,333	5,333	5,337	5,384	108	2.0%
Tract 1118.02	2,408	2,408	2,432	2,434	2,434	2,434	26	1.1%
Tract 1119.03	3,916	3,916	3,981	4,006	4,013	4,020	104	2.6%
Tract 1119.04	3,509	3,509	3,550	3,550	3,564	3,566	57	1.6%
Tract 1119.05	3,583	3,583	3,619	3,619	3,619	3,619	36	1.0%
Tract 1119.06	4,186	4,186	4,235	4,235	4,242	4,252	66	1.6%
Tract 1120.01	3,281	3,281	3,316	3,316	3,318	3,365	84	2.6%
Tract 1120.02	4,505	4,507	4,559	4,563	4,577	4,593	88	1.9%

Note: Additional variables for all tracts are available online Gardner.utah.edu/utah-demographics/
Source: Kem C. Gardner Policy Institute

Appendix 3 (Continued)
Total Population and Change by Census Tract: 2010 Census to July 1, 2014

Salt Lake County Census Tracts	2010 Census	Population Estimates					Change from 2010 Census to July 1, 2014	
		July 1, 2010	July 1, 2011	July 1, 2012	July 1, 2013	July 1, 2014	Numeric	Percent
Tract 1121	7,264	7,296	7,368	7,615	9,197	9,388	2,124	29.2%
Tract 1122.01	5,249	5,249	5,298	5,298	5,298	5,298	49	0.9%
Tract 1122.02	3,909	3,909	3,949	3,951	3,951	3,957	48	1.2%
Tract 1123.01	3,823	3,826	3,863	3,863	3,871	3,878	55	1.4%
Tract 1123.02	3,573	3,573	3,607	3,607	3,610	3,610	37	1.0%
Tract 1124.02	6,449	6,449	6,513	6,544	6,553	6,567	118	1.8%
Tract 1124.03	4,473	4,837	5,717	6,506	7,178	7,654	3,181	71.1%
Tract 1124.04	3,903	3,903	3,944	3,946	3,946	3,949	46	1.2%
Tract 1125.01	3,735	3,735	3,771	3,771	3,771	3,776	41	1.1%
Tract 1125.02	6,155	6,164	6,237	6,244	6,244	6,246	91	1.5%
Tract 1125.03	4,633	4,643	4,694	4,707	4,727	4,740	107	2.3%
Tract 1126.04	5,101	5,101	5,149	5,149	5,149	5,149	48	0.9%
Tract 1126.05	6,795	6,816	6,914	6,917	7,062	7,073	278	4.1%
Tract 1126.08	5,276	5,276	5,325	5,325	5,325	5,325	49	0.9%
Tract 1126.09	5,553	5,556	5,608	5,611	5,611	5,614	61	1.1%
Tract 1126.10	4,316	4,316	4,465	4,542	4,679	4,886	570	13.2%
Tract 1126.11	6,655	6,658	6,725	6,728	6,728	6,776	121	1.8%
Tract 1126.12	4,096	4,096	4,136	4,136	4,138	4,324	228	5.6%
Tract 1126.13	4,915	4,915	4,961	4,961	4,964	4,964	49	1.0%
Tract 1126.14	3,380	3,380	3,411	3,411	3,414	3,417	37	1.1%
Tract 1126.15	2,419	2,419	2,441	2,441	2,441	2,441	22	0.9%
Tract 1126.16	4,533	4,533	4,575	4,575	4,588	4,601	68	1.5%
Tract 1126.17	3,551	3,551	3,584	3,584	3,584	3,587	36	1.0%
Tract 1126.18	3,261	3,261	3,309	3,315	3,315	3,320	59	1.8%
Tract 1126.19	3,110	3,110	3,148	3,148	3,148	3,148	38	1.2%
Tract 1127	4,821	4,824	4,935	5,427	5,501	5,602	781	16.2%
Tract 1128.04	5,602	5,602	5,658	5,658	5,665	5,665	63	1.1%
Tract 1128.05	5,343	5,343	5,393	5,393	5,393	5,393	50	0.9%
Tract 1128.10	7,066	7,070	7,215	7,326	7,591	8,873	1,807	25.6%
Tract 1128.12	5,670	5,670	5,726	5,729	5,729	5,729	59	1.0%
Tract 1128.13	5,449	5,449	5,516	5,546	5,559	5,576	127	2.3%
Tract 1128.14	4,696	4,703	4,786	4,832	4,852	4,932	236	5.0%
Tract 1128.15	5,044	5,047	5,114	5,128	5,158	5,175	131	2.6%
Tract 1128.16	4,852	4,856	4,936	4,971	5,036	5,421	569	11.7%
Tract 1128.17	6,374	6,576	7,255	7,405	7,601	7,783	1,409	22.1%
Tract 1128.18	3,840	3,840	3,840	3,840	3,840	3,840	0	0.0%
Tract 1128.19	7,040	7,051	7,241	7,405	7,625	7,812	772	11.0%
Tract 1128.20	7,344	7,344	7,420	7,436	7,488	7,549	205	2.8%
Tract 1128.21	6,257	6,257	6,326	6,368	6,410	6,453	196	3.1%
Tract 1128.22	4,709	4,709	4,806	4,899	4,969	5,019	310	6.6%
Tract 1128.23	4,493	4,512	4,587	4,618	4,972	5,663	1,170	26.0%
Tract 1129.04	6,731	6,731	6,795	6,795	6,795	6,795	64	0.9%
Tract 1129.05	5,391	5,394	5,511	5,518	5,524	5,531	140	2.6%

Note: Additional variables for all tracts are available online Gardner.utah.edu/utah-demographics/
Source: Kem C. Gardner Policy Institute

Appendix 3 (Continued)
Total Population and Change by Census Tract: 2010 Census to July 1, 2014

Salt Lake County Census Tracts	2010 Census	Population Estimates					Change from 2010 Census to July 1, 2014	
		July 1, 2010	July 1, 2011	July 1, 2012	July 1, 2013	July 1, 2014	Numeric	Percent
Tract 1129.07	4,648	4,648	4,691	4,691	4,691	4,691	43	0.9%
Tract 1129.12	2,769	2,769	2,794	2,794	2,794	2,798	29	1.0%
Tract 1129.13	5,129	5,129	5,184	5,187	5,194	5,211	82	1.6%
Tract 1129.14	6,293	6,293	6,357	6,357	6,357	6,372	79	1.3%
Tract 1129.16	4,567	4,567	4,612	4,836	4,836	4,836	269	5.9%
Tract 1129.17	3,864	3,864	3,900	3,900	3,900	3,900	36	0.9%
Tract 1129.18	5,242	5,242	5,293	5,296	5,296	5,296	54	1.0%
Tract 1129.20	4,309	4,309	4,355	4,382	4,508	4,649	340	7.9%
Tract 1129.21	3,444	3,444	3,504	3,507	3,540	3,550	106	3.1%
Tract 1130.07	5,005	5,005	5,051	5,051	5,055	5,059	54	1.1%
Tract 1130.08	6,174	6,182	6,273	6,350	6,416	6,424	250	4.0%
Tract 1130.10	6,343	6,353	6,438	6,464	6,566	6,634	291	4.6%
Tract 1130.11	5,806	5,809	5,986	6,129	6,237	6,450	644	11.1%
Tract 1130.12	4,854	4,879	4,949	5,017	5,157	5,412	558	11.5%
Tract 1130.13	4,990	5,043	5,158	5,203	5,248	5,293	303	6.1%
Tract 1130.14	3,930	3,937	4,092	4,326	4,336	4,350	420	10.7%
Tract 1130.16	6,079	6,159	6,313	6,483	6,576	6,686	607	10.0%
Tract 1130.17	6,689	6,689	6,751	6,759	6,770	7,022	333	5.0%
Tract 1130.19	5,973	5,977	6,461	7,473	8,003	9,202	3,229	54.1%
Tract 1130.20	11,672	11,970	13,825	14,969	16,112	17,163	5,491	47.0%
Tract 1131.01	7,158	7,162	7,236	7,236	7,236	7,236	78	1.1%
Tract 1131.02	3,892	3,903	4,038	4,046	4,057	4,057	165	4.2%
Tract 1131.05	4,235	4,239	4,421	4,627	4,882	5,170	935	22.1%
Tract 1131.07	21,591	22,247	23,528	23,873	24,574	25,701	4,110	19.0%
Tract 1131.08	4,444	4,444	4,485	4,485	4,485	4,485	41	0.9%
Tract 1133.08	5,079	5,079	5,130	5,137	5,137	5,137	58	1.1%
Tract 1133.09	4,928	4,928	4,976	4,976	4,976	4,976	48	1.0%
Tract 1133.10	3,015	3,015	3,045	2,978	2,981	2,992	-23	-0.8%
Tract 1134.06	6,746	6,746	6,816	6,816	6,816	6,816	70	1.0%
Tract 1134.07	10,940	10,944	11,106	11,152	11,208	11,412	472	4.3%
Tract 1134.08	6,644	6,644	6,707	6,707	6,711	6,714	70	1.1%
Tract 1134.09	5,458	5,458	5,510	5,510	5,459	5,444	-14	-0.3%
Tract 1134.10	6,508	6,508	6,569	6,569	6,569	6,569	61	0.9%
Tract 1134.11	2,689	2,689	2,714	2,721	2,721	2,721	32	1.2%
Tract 1134.12	2,847	2,851	2,897	2,908	2,908	2,908	61	2.1%
Tract 1134.13	5,605	5,605	5,658	5,671	5,712	5,725	120	2.1%
Tract 1135.05	6,796	6,796	6,861	6,861	6,861	6,861	65	1.0%
Tract 1135.09	6,332	6,338	6,417	6,443	6,517	6,543	211	3.3%
Tract 1135.10	3,251	3,251	3,290	3,350	3,367	3,409	158	4.9%
Tract 1135.11	3,675	3,675	3,710	3,710	3,710	3,710	35	1.0%
Tract 1135.12	3,510	3,510	3,547	3,547	3,547	3,547	37	1.1%
Tract 1135.13	5,631	5,631	5,687	6,189	6,189	6,189	558	9.9%
Tract 1135.14	5,741	5,741	5,803	5,822	5,828	5,828	87	1.5%

Note: Additional variables for all tracts are available online Gardner.utah.edu/utah-demographics/
Source: Kem C. Gardner Policy Institute

Appendix 3 (Continued)
Total Population and Change by Census Tract: 2010 Census to July 1, 2014

Salt Lake County Census Tracts	2010 Census	Population Estimates					Change from 2010 Census to July 1, 2014	
		July 1, 2010	July 1, 2011	July 1, 2012	July 1, 2013	July 1, 2014	Numeric	Percent
Tract 1135.15	5,788	5,788	5,855	5,866	5,868	5,896	108	1.9%
Tract 1135.20	3,983	3,983	4,021	4,021	4,021	4,021	38	1.0%
Tract 1135.21	6,489	6,496	6,558	6,558	6,561	6,564	75	1.2%
Tract 1135.22	3,293	3,293	3,323	3,323	3,323	3,326	33	1.0%
Tract 1135.23	6,255	6,255	6,314	6,314	6,314	6,314	59	0.9%
Tract 1135.25	7,102	7,119	7,261	7,384	7,747	8,056	954	13.4%
Tract 1135.26	5,266	5,285	5,364	5,398	5,489	5,572	306	5.8%
Tract 1135.27	4,566	4,566	4,609	4,609	4,609	4,609	43	0.9%
Tract 1135.28	5,320	5,320	5,369	5,369	5,369	5,369	49	0.9%
Tract 1135.32	3,177	3,177	3,207	3,207	3,254	3,282	105	3.3%
Tract 1135.33	4,787	4,787	4,847	4,859	4,878	4,891	104	2.2%
Tract 1135.34	7,303	7,318	7,435	7,454	7,492	7,548	245	3.4%
Tract 1135.35	7,020	7,020	7,089	7,089	7,093	7,093	73	1.0%
Tract 1135.36	4,158	4,158	4,200	4,200	4,200	4,200	42	1.0%
Tract 1135.37	3,582	3,582	3,619	3,619	3,619	3,622	40	1.1%
Tract 1135.38	3,277	3,277	3,312	3,312	3,316	3,316	39	1.2%
Tract 1135.39	4,723	4,727	4,783	4,802	4,817	4,817	94	2.0%
Tract 1136	5,291	5,291	5,341	5,341	5,341	5,341	50	1.0%
Tract 1137.01	4,074	4,074	4,112	4,112	4,112	4,112	38	0.9%
Tract 1137.02	2,760	2,760	2,786	2,789	2,789	2,789	29	1.1%
Tract 1138.01	5,775	5,775	5,833	5,833	5,833	5,868	93	1.6%
Tract 1138.02	4,015	4,015	4,054	4,054	4,054	4,054	39	1.0%
Tract 1138.03	8,675	8,675	8,757	8,757	8,757	8,757	82	0.9%
Tract 1139.03	4,933	4,947	5,035	5,039	5,049	5,067	134	2.7%
Tract 1139.04	5,657	5,657	5,714	5,714	5,714	5,717	60	1.1%
Tract 1139.05	7,316	7,327	7,415	7,434	7,445	7,476	160	2.2%
Tract 1139.06	3,969	3,972	4,023	4,023	4,026	4,035	66	1.7%
Tract 1139.07	6,838	6,926	7,148	7,223	7,386	7,563	725	10.6%
Tract 1140	1,501	1,501	1,517	2,110	2,112	2,112	611	40.7%
Tract 1141	2,389	2,389	2,412	2,412	2,412	2,412	23	1.0%
Tract 1142	4,419	4,432	4,505	4,585	4,678	4,751	332	7.5%
Tract 1143	15,965	16,439	17,920	18,272	18,869	19,254	3,289	20.6%
Tract 1145	6,037	6,048	6,190	6,309	6,394	6,953	916	15.2%
Tract 1146	6,998	6,998	7,069	7,073	7,125	7,170	172	2.5%
Tract 1147	4,714	4,714	4,762	4,765	4,765	4,765	51	1.1%
Tract 1148	3,550	3,553	3,592	3,597	3,600	3,600	50	1.4%
Tract 1151.06	7,858	7,897	8,429	8,861	9,908	11,143	3,285	41.8%
Tract 1152.09	6,110	6,135	6,911	7,584	7,894	8,808	2,698	44.2%
Tract 9800	0	0	0	0	0	0	0	-

Note: Additional variables for all tracts are available online Gardner.utah.edu/utah-demographics/
Source: Kem C. Gardner Policy Institute

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