APPLIED ECONOMICS

DEER VALLEY UNIFIED SCHOOL DISTRICT
DEMOGRAPHIC AND ENROLLMENT ANALYSIS
FINAL REPORT

PREPARED FOR:

DEER VALLEY UNIFIED SCHOOL DISTRICT
20402 N 15TH AVE
PHOENIX, AZ 85027

JANUARY 8, 2014

TABLE OF CONTENTS

EXUCTIVE SUMMARY iii

INTRODUCTION 1

2.0 EXISTING CONDITIONS 3

- 2.1 CURRENT & HISTORICAL ENROLLMENT 3
- 2.2 POPULATION & HOUSEHOLDS 7
- 2.3 HOUSING CONSTRUCTION 11
- 2.4 HOUSING VACANCY TRENDS 13

3.0 RESIDENTIAL DEVELOPMENT POTENTIAL 15

4.0 DISTRICT-LEVEL PROJECTIONS 25

- 4.1 HOUSING & POPULATION 25
- 4.2 SCHOOL-AGE POPULATION & CAPTURE 27
- 4.3 CHARTER AND PRIVATE SCHOOL ENROLLMENT 29
- 4.4 ENROLLMENT 33

5.0 SUB-DISTRICT PROJECTIONS 35

- 5.1 DEMOGRAPHIC CHARACTERISTICS 35
- 5.2 SCHOOL ENROLLMENT BY ATTENDANCE AREA 48
- 5.4 ENROLLMENT PROJECTIONS BY SCHOOL 53

EXECUTIVE SUMMARY

This report presents the key findings of the 2013/14 Demographic and Enrollment Analysis performed for the Deer Valley Unified School District by Applied Economics. The purpose of this analysis is to identify current and historic demographic, development and enrollment trends, and to anticipate future trends to create District-level and sub-district enrollment projections through 2023/24. The Demographic and Enrollment Analysis for the 2013/14 school year incorporates the results of the 2010 Census, in addition to the regular annual update information.

Enrollment in the Deer Valley Unified School District increased by 50 percent over the past decade, with the declines in recent years linked to the collapse in the residential real estate market and the stagnant regional economy. While this is less than the growth that occurred in the previous decade, it still represents a significant increase in enrollment. However, Kindergarten to 12th grade enrollment has declined the last five years, falling by 3,353 students from the peak in 2008/09 to 2013/14, and is expected to continue to decline gradually over the next 10 years due to a combination of declining household size and declining capture rates for student population.

Despite rapid growth in the first half of the 2000 to 2010 period, followed by moderate declines in the past several years, the demographic makeup of the district has not changed significantly. However, the overall aging of the population is evident. Looking at the age breakdown of the population, the potential impacts on District enrollment become apparent. Both the under 5 and the 5 to 13 age groups grew less than the population as a whole from 2000 and 2010, affecting both current and future enrollments. The 14 to 17 year old high school group grew at a rate nearly proportional to total population, which is mirrored by the trends in enrollment by level in the District.

Changes in the population are reflected in the age and family structure of the households in the District. Overall, the share of households with children declined only slightly from 2000 to 2010, however the ages of the children shifted significantly. The number of households with school-age children (6 to 17 years old) was up by 58 percent from 2000 to 2010, but the households with children under 6, future school kids, increased by only 33 percent. Data regarding the age of the householder reflects population changes. Households headed by persons in the prime parenting years, from age 25 to 44, increased by 23 percent or about 6,600 households between 2000 and 2010. In the same period, the number of households aged 55 or over increased by almost 14,000, with the largest increase (117 percent) in the 55 to 64 year old group. Thus, even though all population groups grew over the past decade, that growth was more concentrated in older age cohorts, particularly households beyond child bearing age.

The Deer Valley Unified School District has residential development potential currently estimated at just over 40,000 total housing units. However, over half of the active projects are in the "Custom/Infill" category, which are generally rural, or infill projects that are likely to be under development intermittently over a number of years. Additionally, there is a significant amount of land in the northern half of the District that is held by the State Land Department and is likely to have a lengthier timeline for development than privately held land.

This analysis integrates trends in demographic and development information for the Deer Valley Unified District in order to project changes to District-level enrollment. The level of projected change is based on housing growth forecasts, occupancy rates, and per household student-age population generation rates. Based on the projected absorption of about 6,800 units over the next ten years, total inventory in the District is expected to rise to about 105,100 units. More important than the number of new housing units is the number of **occupied** housing units, or households. While 6,800 new housing units are to be added over the next ten years, the number of households is expected to increase by about 8,400, based on the combination of new units and higher occupancy rates. Combined with demographic trends, this would result in a total District-wide population of about 264,100 people in 2023/24, or an increase of about 19,100 persons.

In addition to the volume and market orientation of household growth, trends in per-household student generation rates and capture rates are key factors used in determining future enrollment levels. The first element, student generation, refers to the expected size of the school-age population, 5 to 17 years old, per household. The average number of school-age persons per household has decreased from a high of 0.582 in 2001/02 to just 0.529 currently. Because of the increasing number of educational alternatives, a "capture rate" must be applied to the school-age population to project enrollment. After the District cut free all-day kindergarten, the long term decline in the capture rate began to accelerate. At the present time, about 14,500 school-age persons in the District choose other educational providers, resulting in an implied capture rate of 70 percent. Based on reinstating free all-day kindergarten next year, the capture is projected to stabilize over the next several years.

Overall, District enrollment is expected to decline next year then gradually increase over the following nine years. There should be only small fluctuations from one year to the next, but a total gain of just over 1,200 total students is expected by 2023/24, based on an increase of 1,500 in the school age population of the District. The change at the K-4 level is expected to be significant with an increase of about 460 students from current enrollment, with all of the increase occurring in the next five years. The middle grades (5-8) should experience an even larger increase of about 650 students for the 10-year period after declining somewhat during the first five years of the projections. In contrast, the number of students in grades 9-12 is expected to remain fairly steady, increasing by 114 students as more of the new housing in the district is occupied by families with older children.

Sub-district enrollment projections are based on the attendance at each school and the residency of the Deer Valley Unified School District student population. These projections provide a cross-check for the district enrollment projections and information for comparing enrollment by school with enrollment by attendance area. The attendance areas have meaningful differences in demographic and household characteristics that cause variations in enrollment changes in the future. In some cases there are short term factors affecting enrollment, while more systemic issues are present in others.

In order to project enrollment by school, it is necessary to quantify the relationship between the place of residence and school of attendance. About 83 percent of the high school students are attending the attendance area's designated high school; while about 78 percent of the Kindergarten through 8th grade students attend their attendance area's designated school. Among the elementary schools, Norterra Canyon is projected to grow significantly, reaching nearly 2,000 students by 2023/24. While Highland Lakes and Stetson Hills will also remain among the larger schools, they are each projected to lose students over the ten year period. Terramar is projected to grow by about 400 students, becoming the second largest elementary school by 2023/24. Esperanza and Park Meadows are also projected to show above average growth over the next 10 years while Canyon Springs, Diamond Canyon, Highland Lakes, Las Brisas, Paseo Hills and Sierra Verde are all expected to lose over 100 students.

Among the middle schools, Hillcrest is expected to continue to be the largest of the middle schools through 2023/24, despite declining by 33 students. Deer Valley is projected to grow by nearly 300 students, or 45 percent, largely in the later part of the projection period. Desert Sky is expected to remain relatively steady, with a projected net increase of about 14 students.

All of the growth at the high school level will be at Barry Goldwater, which is projected to show a gain of over 1,400 students, making it the largest high school by 2023/24. Boulder Creek and Sandra Day O'Conner are both expected to show modest declines enrollment over the next ten years of 9 to 11 percent, while Mountain Ridge is projected to decline significantly (26 percent) with the loss of 600 students. Deer Valley is also projected to decline with a net loss of about 300 students.

1.0 INTRODUCTION

This report presents the key findings of the 2013/14 Demographic and Enrollment Analysis performed for the Deer Valley Unified School District by Applied Economics. The purpose of this analysis is to identify current and historic demographic, development and enrollment trends, and to anticipate future trends to create District-level and sub-district enrollment projections through 2023/24. The Demographic and Enrollment Analysis for the 2013/14 school year incorporates the results of the 2010 Census, in addition to the regular annual update information. The regular annual update includes new student enrollment data, along with residential real estate market data and development information. The findings are divided into four sections: existing conditions, residential development potential, District-level projections, and sub-area projections.

Section 2.0, Existing Conditions, provides a historical look at District enrollment and its distribution by geography and grade cohort. This section also compares data from the 2000 and 2010 Census, as well as 2013 estimates, to identify trends in District population and housing that affect District enrollment. Additionally, it includes a look at recent housing construction activity using data compiled by the Maricopa Association of Governments and The Construction Monitor.

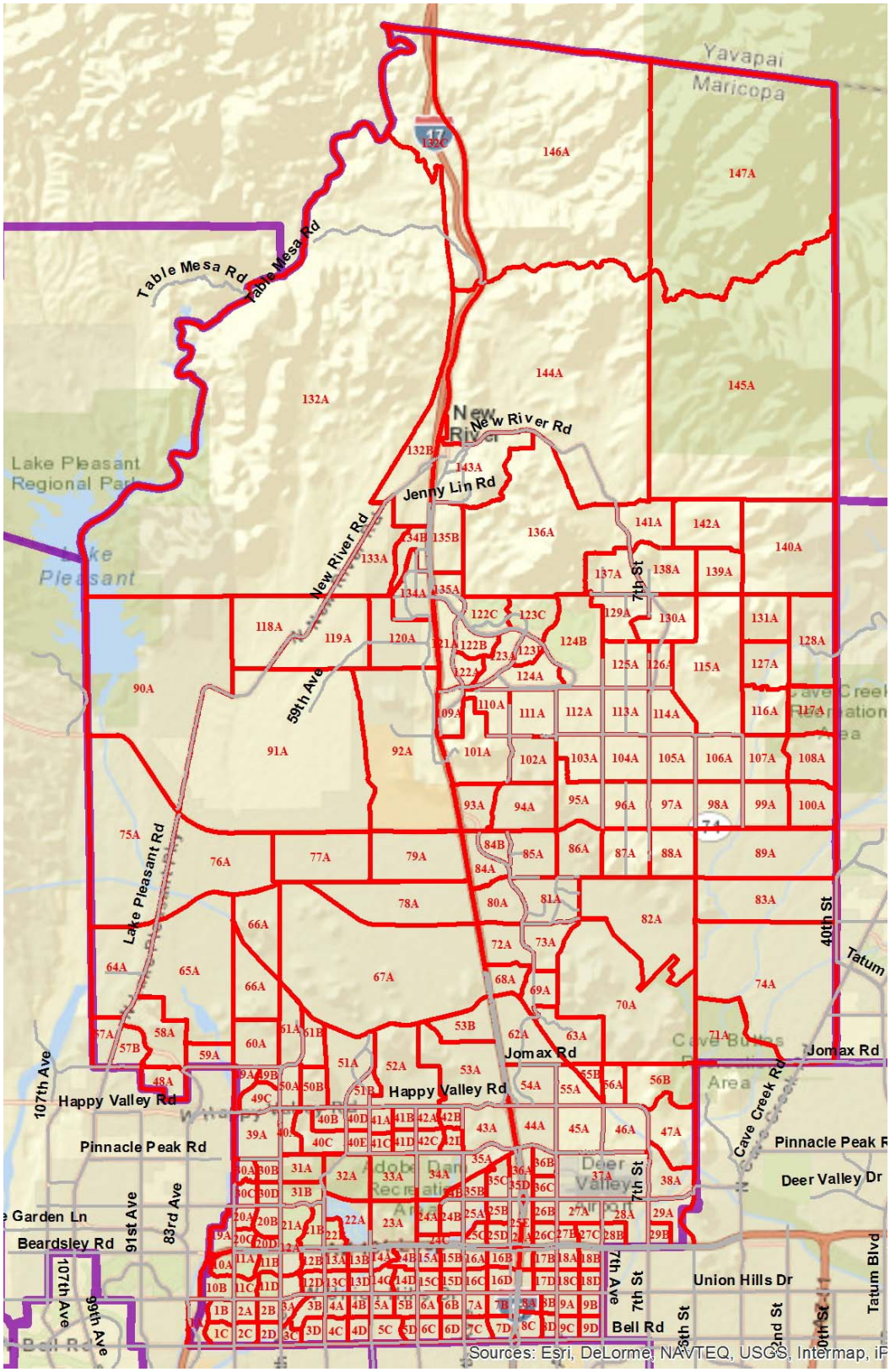
Section 3.0, Residential Development Potential, describes the potential future supply of new housing by type of development, and predicts the timing of construction based on location, ownership, and current planning. This section also includes a discussion of major projects in the District and issues affecting residential development.

Section 4.0, District Projections, combines expected residential development and existing District population, housing and enrollment conditions to create District-level projections. These projections are based on expected changes in household growth, occupancy rates, population per household, and per household generation rates.

Finally, Section 5.0, Sub-district Projections, utilizes an assortment of sub-district demographic data, such as population per household, age, and race/ethnicity, to determine student generation rates for various components of the District. Student generation rates are then applied to the current and future supply of housing and households (occupied housing units) by small geographic planning area (or "grid"), to estimate enrollment by place of residence. This includes students by school attendance areas. The relationship between the number of students that live within an attendance area and the actual school of attendance is also included to show the impact of student movement, including out-of-district students, on school enrollment.

The Deer Valley Unified School District is located in the northern part of the Phoenix metropolitan area in Maricopa County. The District extends from Bell Road on the south to the Maricopa County line on the north. The eastern boundary is generally along the 40th Street alignment and the western boundary extends to 99th Avenue, although the southern end of the District (from Jomax Road down to Bell Road) only covers the area between 7th Avenue and 83rd Avenue. The District includes portions of the City of Phoenix, as well as smaller portions of the cities of Glendale, Peoria, Cave Creek and unincorporated County areas. **Map 1** shows the District boundary and the 255 planning area grids created for this study.

MAP 1
DISTRICT LOCATION AND GRID PLANNING GEOGRAPHY

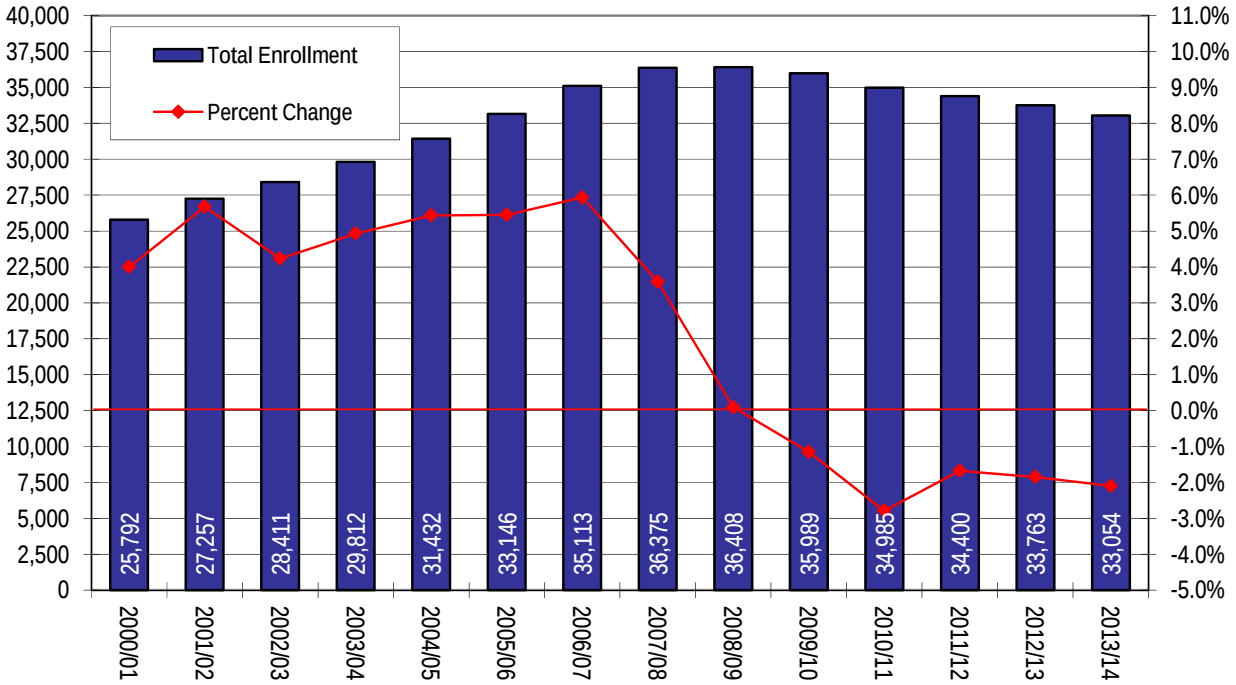


2.0 EXISTING CONDITIONS

2.1 Current & Historical Enrollment

Between 2000 and 2010, enrollment in the Deer Valley Unified School District grew by 35.6 percent, adding about 9,200 students. As shown in **Figure 1**, the bulk of the enrollment growth occurred between the 2000/01 to 2006/07 school years, with year-over-year increases of about 5 percent. Enrollment leveled off in 2008/09, with a mere 33-student annual increase, and has decreased by 1 to 3 percent per year each year since.

FIGURE 1
ENROLLMENT AND ENROLLMENT CHANGE: 2000/01 – 2013/14

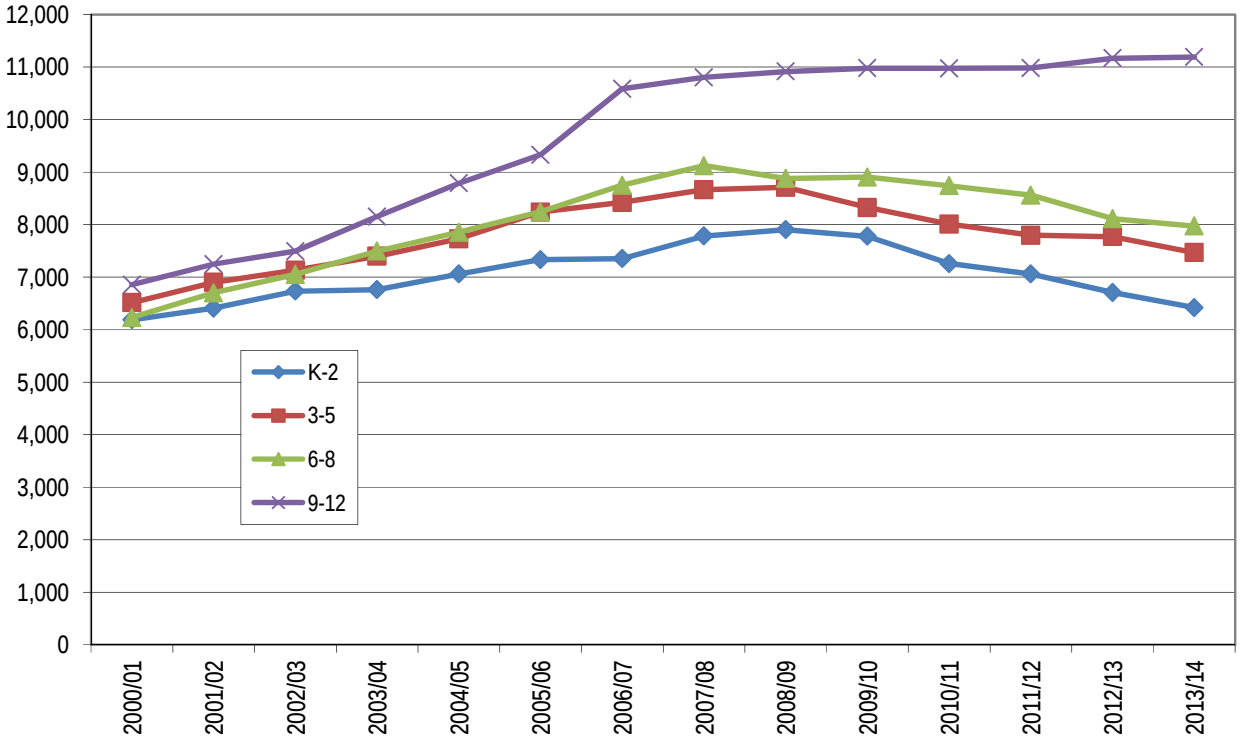


Sources: Deer Valley Unified School District; Applied Economics, 2013.

The breakdown by grade cohort provides a good understanding of the past and current structure of enrollment in the District and lends insight as to what may happen in the future. For this purpose, the grades are divided into four cohorts: three groups of three grades each for grades K-8 and the high school group, which contains four grades. **Figure 2** displays the historic distribution of students by cohort in District schools since 2000/01. Currently, the 9th to 12th grade cohort is the largest, with about 11,200 students, the 6th to 8th grade cohort includes nearly 8,000 students, the 3rd to 5th grade cohort includes around 7,500 students, and the Kindergarten to 2nd grade cohort is the least populous with just over 6,400 students. It is important to note that while the 9th to 12th grade cohort includes an additional grade level, it still maintains a larger per-grade average than the younger cohorts.

As enrollment has increased, it has also begun to shift somewhat in composition. It has become apparent that there is a widening separation between high school enrollment and the enrollment in lower grades during the study period. Between 2000 and 2006, increasing housing prices led to an older homebuyer profile, and hence an increase in the number of older students. Following this period, the recession has had a disproportionally greater impact on young families and further reduced the number of younger students, particularly at the K-2 level.

FIGURE 2
ENROLLMENT BY GRADE COHORT: 2000/01 – 2013/14

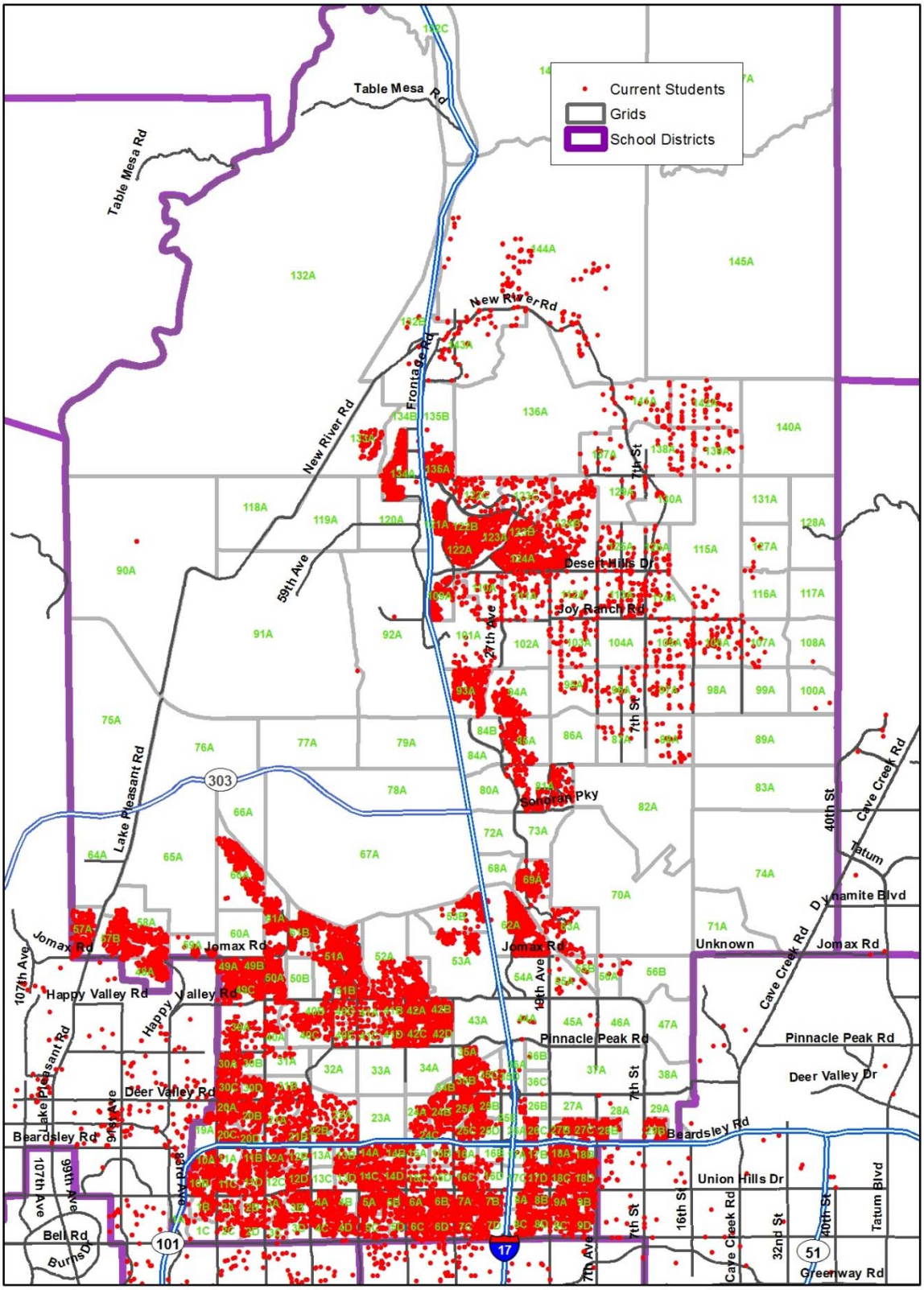


Source: Deer Valley Unified School District; Applied Economics, 2013.

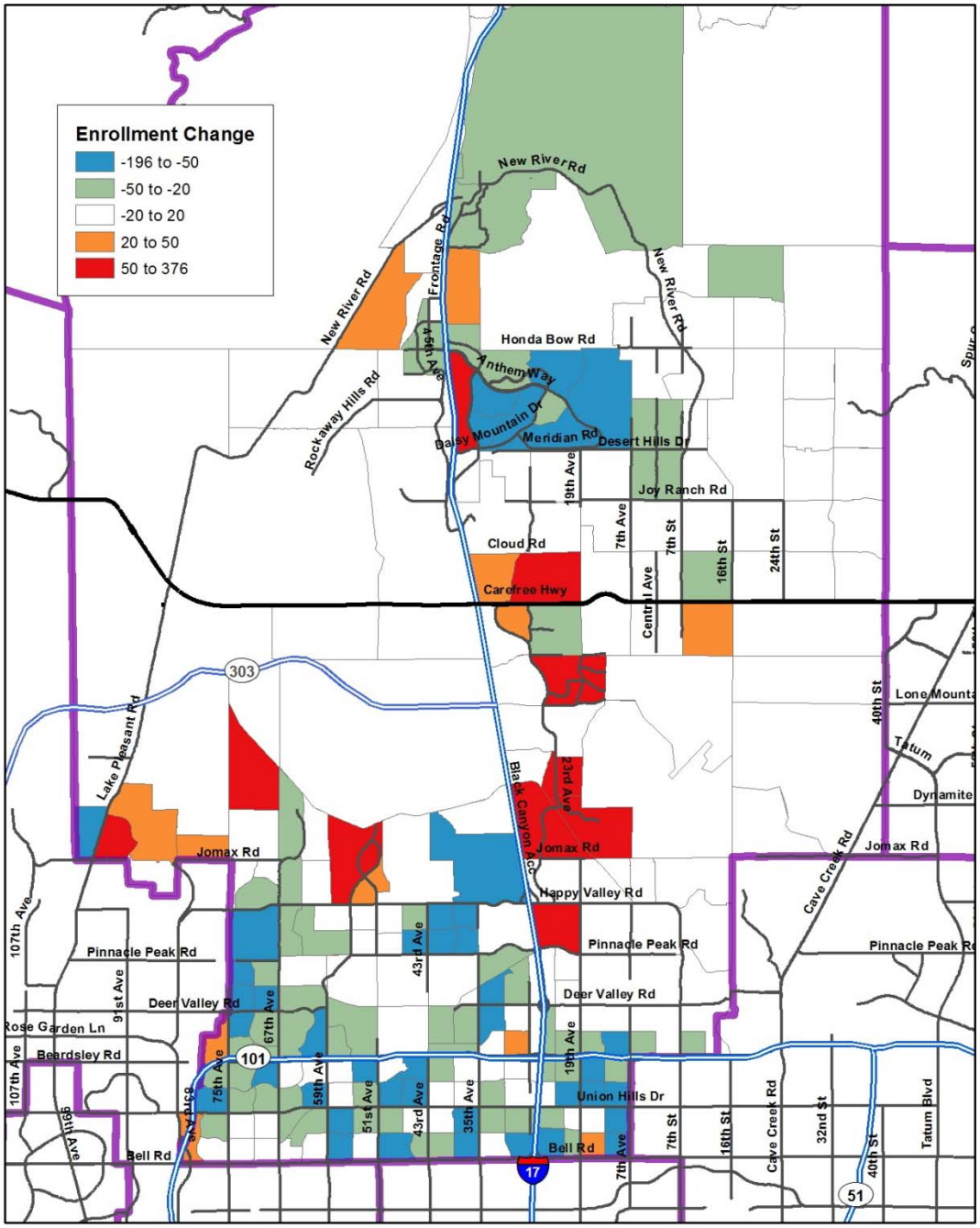
While the economy has started to recover, the lagging effects have the potential to impact each successive cohort for years to come. The sharp decline in the K-2 cohort over the past several years may translate into waning numbers at the middle and high school levels as these students age. As the housing market continues to recover and market fundamentals become more stable, the peaks and troughs in enrollment should become less pronounced.

In addition to looking at enrollment by grade, it is also useful to analyze the geographic distribution of students. **Map 2** shows the geographic distribution of students currently enrolled in the District. The majority of the student population lives in the southern portion of the District. Large student concentrations exist between the Loop 101 and Jomax Road, as well as in other portions of the northeastern part of the District, north of Desert Hills Drive and east of Interstate 17 in Anthem. This area was negatively impacted by the recession, but is now in full recovery, although the amount of land available and ready for development is limited at this time. The northwestern and far northeastern sections of the District are void of a significant student population, as the areas include a substantial amount of State and federal lands.

MAP 2
2013/14 STUDENT DISTRIBUTION



MAP 3
CHANGE IN ENROLLMENT: 2008/09 TO 2013/14



2.2 Population & Households

Table 1 provides a detailed portrayal of District population and housing over time with data from the Census. Like many parts of the Valley, the District experienced a significant increase in enrollment from 2000 to 2010, growing by about 50 percent. Most of that growth occurred in the first half of the decade. Since 2010, both population and enrollment growth have been virtually flat. During the period of rapid growth, there were also some changes in the racial/ethnic composition of the District. Although the District is still predominantly white, the Hispanic population accounted for about one quarter of the growth over the past decade.

The data also shows a general aging of the population between 2000 and 2010, which has had a significant impact on district enrollment. During the 10-year period, the number of persons age 45 to 64 and 65+ increased at a rate twice that of the overall population, while the number of 25 to 44-year-olds grew only about half the rate of the overall population. This slowed growth of the age group most likely to have school-age children, combined with deep and sustained economic recession, has resulted in a decline in enrollment since 2008/09. While the number of school-age children in the district increased overall, the share of children under 5, and 5 to 13 declined as a percent of total population, while the share of older children ages 14 to 17 remained steady. This is consistent with trends in the parent age groups. The aging population has also been reflected in declines in household sizes from 2.80 in 2000, to 2.73 in 2013.

When looking at the current age breakdown of the population for 2013, the potential impact on District enrollment becomes apparent. Both the under 5 and the 5 to 13 age groups have been relatively stagnant since 2010, having grown only 1 to 2 percent over three years. In comparison, the 65 and older age group has grown by nearly 6 percent since 2010. While there is clearly some aging in place that is occurring in more established areas of the District, it is likely that there will be more turnover as the housing market recovers.

The addition of new housing units in the District was consistent with the growth in population, with 35,904 new units added over the 2000 to 2010 time period. As the recession hit during the latter part of that period, the vacancy rate increased from 6.3 percent to 9.6 percent, and the ownership profile shifted to more renter occupied units. While the increase in vacancy rate was less dramatic than in some parts of the metro area, it has only declined 1 percent since 2010, leaving close to 8,500 vacant units District-wide. Also, while the housing market is still predominantly single family (83 percent), about one quarter of the housing stock (both single and multi-family) continues to be occupied by renters as people recover from financial damage caused by the recession. The significance of these issues lies in the fact that greater proportions of owner-occupied units tend to increase student populations more in the near-term, but then result in somewhat higher losses over time as the population ages in place. Rental units tend to have fewer school-age persons present, especially in higher grades, though higher turnover in units can serve as a type of stability as new families move in rather than remaining over extended periods of time.

Changes in the population are mirrored in the age and family structure of the households in the District, (a household is an occupied housing unit). **Table 2** shows a comparison of household characteristics from the 2000 and the 2010 Census. The share of households with children has remained fairly constant through the growth period of the early 2000s. The number of households with school-age children (6 to 17 years old) is up by 58 percent or about 7,200 households, while the households with children under 6 (representing future enrollment) only increased by 33 percent.

TABLE 1
POPULATION AND HOUSING TRENDS

	2000 Census		2010 Census		2013 Estimate		Change (2000-2010)	
	Total	Percent	Total	Percent	Total	Percent	Total	Percent
Population								
Total	159,234	100.0%	239,040	100.0%	245,026	100.0%	79,806	50.1%
By Race & Ethnicity:								
White	134,862	84.7%	189,437	79.2%	193,129	78.8%	54,575	40.5%
African American	3,333	2.1%	5,623	2.4%	5,735	2.3%	2,290	68.7%
Native American	1,175	0.7%	1,786	0.7%	1,813	0.7%	611	52.0%
Asian	3,736	2.3%	11,727	4.9%	12,501	5.1%	7,991	213.9%
Hispanic	15,933	10.0%	30,090	12.6%	31,460	12.8%	14,157	88.9%
Other	193	0.1%	377	0.2%	386	0.2%	184	95.3%
By Age:								
Under 5	12,717	8.0%	16,602	6.9%	16,933	6.9%	3,885	30.5%
5 to 13	23,031	14.5%	32,582	13.6%	32,951	13.4%	9,551	41.5%
14 to 17	10,016	6.3%	14,368	6.0%	14,581	6.0%	4,352	43.5%
18 to 24	13,474	8.5%	20,143	8.4%	20,585	8.4%	6,669	49.5%
25 to 44	56,869	35.7%	71,267	29.8%	72,686	29.7%	14,398	25.3%
45 to 64	33,731	21.2%	64,693	27.1%	66,777	27.3%	30,962	91.8%
65 and up	9,396	5.9%	19,385	8.1%	20,512	8.4%	9,989	106.3%
Housing Units								
Total	60,589	100.0%	96,493	100.0%	98,249	100.0%	35,904	59.3%
Occupied	56,782	93.7%	87,217	90.4%	89,800	91.4%	30,435	53.6%
Owner	44,491	73.4%	63,211	65.5%	64,040	65.2%	18,720	42.1%
Renter	12,291	20.3%	24,006	24.9%	25,760	26.2%	11,715	95.3%
Vacant	3,807	6.3%	9,276	9.6%	8,449	8.6%	5,469	143.7%
Seasonal Use	1,190	2.0%	2,111	2.2%	2,160	2.2%	921	77.4%
By Unit Type:								
Single Family	50,715	83.7%	79,651	82.5%	81,065	82.5%	28,936	57.1%
Multifamily	9,874	16.3%	16,842	17.5%	17,184	17.5%	6,968	70.6%
Households								
Total	56,782	100.0%	87,217	100.0%	89,800	100.0%	30,435	53.6%
Population Per	2.80		2.74		2.73		-0.06	-2.3%

Sources: U.S. Bureau of the Census, 2000 and 2010; Applied Economics, 2013.

Data regarding the age of the householder corroborates population changes described previously. In the prime parenting years, from age 25 to 44, the number of households increased by 23 percent between 2000 and 2010, or 6,553 households. In the same period, the number of households aged 55 or over increased by 13,998, with the largest increase (109 percent) in the 55 to 64-year-old group. Because many parents are choosing to have children later, the 45 to 54 age group (which continued to increase) is also important, especially to the number of older children in move-up housing markets. The increase in the number households headed by persons age 45 to 54 was the largest among all the age cohorts and is consistent with increases in high school enrollment over the past decade.

TABLE 2
HOUSEHOLD CHARACTERISTIC TRENDS

	2000		2010		Change (2000-2010)	
Total Households	56,782	100.0%	87,217	100.0%	30,435	53.6%
Households with Kids	22,856	40.3%	33,869	38.8%	11,013	48.2%
Under 6 only	5,918	10.4%	7,863	9.0%	1,945	32.9%
Under 6 and 6 to 17	4,668	8.2%	6,962	8.0%	2,294	49.1%
6 to 17 only	12,270	21.6%	19,436	22.3%	7,166	58.4%
Couple	17,910	31.5%	24,245	27.8%	6,335	35.4%
Under 6 only	4,720	8.3%	5,722	6.6%	1,002	21.2%
Under 6 and 6 to 17	3,970	7.0%	5,458	6.3%	1,488	37.5%
6 to 17 only	9,220	16.2%	13,065	15.0%	3,845	41.7%
Single Parent	4,930	8.7%	10,016	11.5%	5,086	103.2%
Under 6 only	1,195	2.1%	2,078	2.4%	883	73.9%
Under 6 and 6 to 17	695	1.2%	1,471	1.7%	776	111.7%
6 to 17 only	3,040	5.4%	6,075	7.0%	3,035	99.8%
Households without Kids	33,926	59.7%	53,348	61.2%	19,422	57.2%
Couple	16,411	28.9%	24,667	28.3%	8,256	50.3%
Single	2,810	4.9%	4,592	5.3%	1,782	63.4%
Non-family	14,705	25.9%	24,089	27.6%	9,384	63.8%
Households by Age of Householder						
15 to 24	2,850	5.0%	3,669	4.2%	819	28.7%
25 to 34	12,325	21.7%	14,836	17.0%	2,511	20.4%
35 to 44	16,467	29.0%	20,509	23.5%	4,042	24.5%
45 to 54	12,330	21.7%	21,395	24.5%	9,065	73.5%
55 to 64	7,135	12.6%	15,461	17.7%	8,326	116.7%
65 to 74	3,670	6.5%	7,684	8.8%	4,014	109.4%
Over 75	2,005	3.5%	3,663	4.2%	1,658	82.7%

Source: U.S. Bureau of the Census, 2000 and 2010.

While the share of households with children remained fairly stable, the share of single parent households increased significantly from 2000 to 2010. This trend was most concentrated in households with children between the ages of 6 and 17 years old.

Statistical analysis of information on households by age shows a very strong correlation between the number of households in the 35 to 44 and 45 to 54 year old age groups, and the number of elementary and high school age persons generated. In many Districts, the 25 to 34 year old group is more important to the elementary group than the 35 to 44 year old group. Regression statistics, provided in **Table 3**, show the early elementary population (persons aged 5 to 9) numbering 0.87 persons per household for householders aged 35 to 44, while the older elementary population (ages 10 to 13) averages 0.49 children per household for householders ages 35 to 44.

For high schools, the regression analysis shows 0.22 persons (ages 14 to 17) per householder age 35 to 44, and 0.45 persons per householder age 45 to 54. As expected, the older householders are more significant in predicting the existence of older children, but the fact that both groups are important to both the age groups is somewhat unique. Both of these regressions provide relationships valid at a 95 percent level of confidence.

TABLE 3
HOUSEHOLDER AGE AND SCHOOL AGE POPULATION ANALYSIS

POPULATION 5 TO 9 OUTPUT

Regression Statistics	
Multiple R	0.98634228
R Square	0.9728711
Adjusted R Square	0.96873887
Standard Error	18.0420859
Observations	243

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	2824957.506	2824957.51	8678.37531	5.4217E-191
Residual	242	78775.08079	325.516863		
Total	243	2903732.587			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A
35 to 44	0.87070982	0.009346612	93.1577979	1.448E-191	0.852298726	0.889120923

POPULATION 10 TO 13 OUTPUT

Regression Statistics	
Multiple R	0.97535021
R Square	0.95130803
Adjusted R Square	0.94695661
Standard Error	19.4262314
Observations	243

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	1776879.578	888439.789	2354.24081	1.9441E-158
Residual	241	90948.21056	377.378467		
Total	243	1867827.788			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A
35 to 44	0.48939716	0.02642808	18.518075	3.2536E-48	0.437337643	0.541456676
45 to 54	0.22733322	0.028285565	8.03707549	4.1165E-14	0.171614722	0.283051712

TABLE 3 (Continued)
HOUSEHOLDER AGE AND SCHOOL AGE POPULATION ANALYSIS

POPULATION 14 TO 17 OUTPUT

Regression Statistics	
Multiple R	0.95497636
R Square	0.91197984
Adjusted R Square	0.90746524
Standard Error	24.2541031
Observations	243

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	1468894.412	734447.206	1248.50459	1.4197E-127
Residual	241	141771.0259	588.261518		
Total	243	1610665.438			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	0	#N/A	#N/A	#N/A	#N/A	#N/A
35 to 44	0.22218111	0.032996074	6.73356201	1.203E-10	0.157183589	0.287178631
45 to 54	0.44597849	0.035315187	12.6285185	2.1374E-28	0.376412653	0.515544334

2.3 Housing Construction

Residential building permits in the Deer Valley District have increased significantly each of the last two years, after several years of declining activity following the collapse in the housing market and the ensuing recession. As seen on **Table 4**, local development has been generally focused toward housing at less than 3.5 units per acre. Multifamily permits have comprised about 20 percent of the housing construction over the past ten years, which is a significant amount for a mostly suburban market.

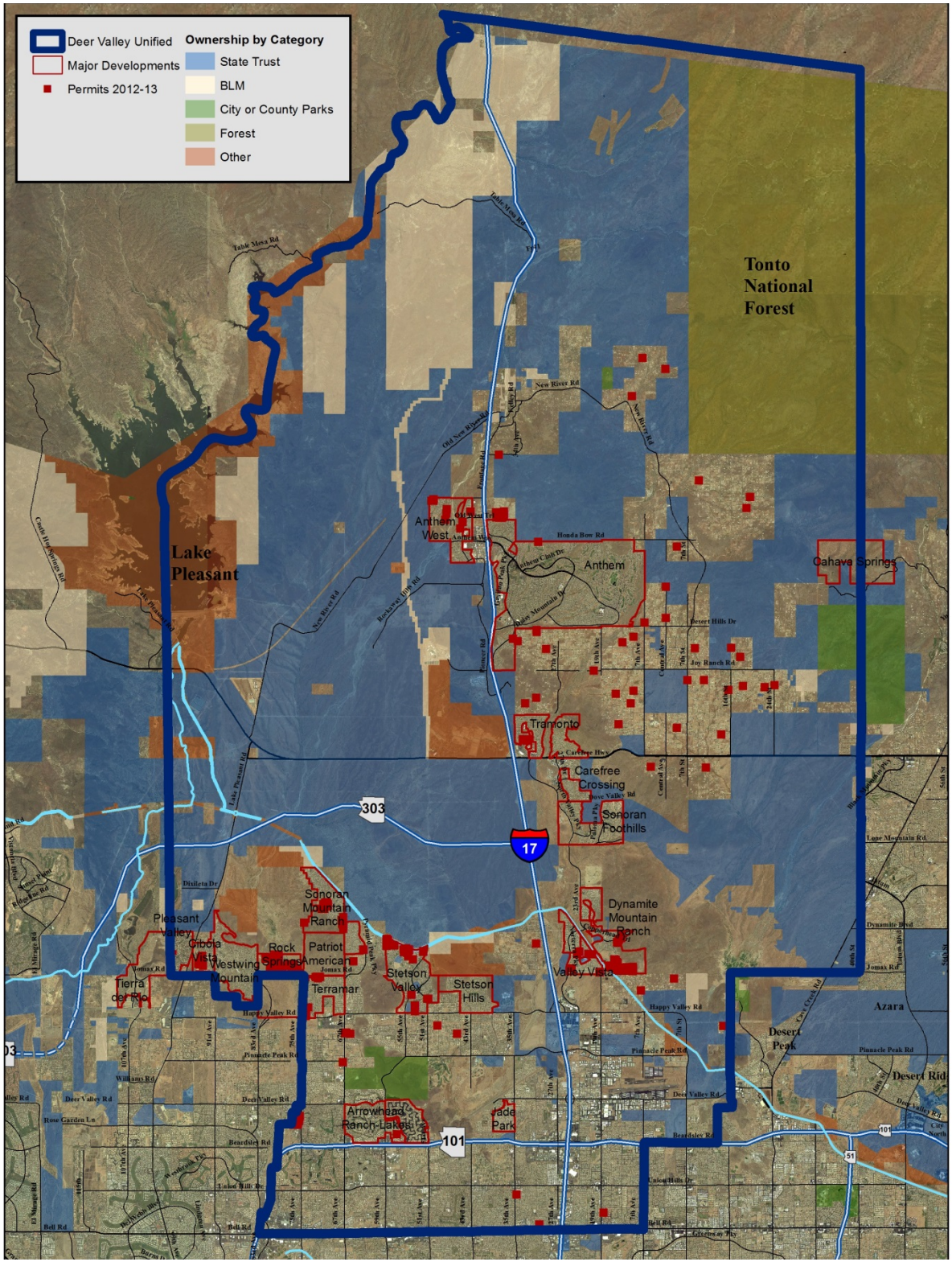
TABLE 4
HOUSING PERMITS

Housing Type	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	Total
Non-Retirement Housing											
Single Family 2 du/ac or less	1,133	1,260	1,220	932	400	201	172	84	128	208	5,738
Single Family 2.01 - 3.5 du/ac	1,193	1,477	1,729	955	440	252	198	138	247	351	6,980
Single Family 3.51 - 4.5 du/ac	2,030	1,681	1,665	326	133	71	54	35	86	42	6,123
Single Family 4.51 - 6 du/ac	94	134	101	59	-	-	-	7	44	44	483
Single Family 6.01du/ac & Over	-	-	-	61	-	-	-	-	-	-	61
Single Family Attached	-	-	-	-	-	-	-	-	-	-	-
Total Single Family	4,450	4,552	4,715	2,333	973	524	424	264	505	645	19,385
Multifamily to 12 du/ac	76	44	4	82	146	30	-	-	-	-	382
Multifamily 12.0 du/ac & Over	448	838	800	352	252	1,255	359	8	334	-	4,646
Total Multifamily	524	882	804	434	398	1,285	359	8	334	-	5,028
Total	4,974	5,434	5,519	2,767	1,371	1,809	783	272	839	645	24,413

Sources: Maricopa Association of Governments; Construction Monitor; Maricopa County Assessor; Applied Economics, 2013.

Development in the District is strongly influenced by geography and land ownership. Some of the fluctuations in housing construction are a result of the somewhat disjointed nature of developable land. As shown on **Map 4**, development areas are separated by mountainous terrain and confined by large tracts of state trust land not yet available for development. The map shows housing permits taken out during the 2012/13 school year. Most are concentrated in major developments south of the CAP canal or along the INTERSTATE 17 corridor, with a significant amount of permitting dispersed in rural areas, especially southeast of Anthem where a number of houses have been added on parcels of between 1 and 10 acres.

MAP 4
RESIDENTIAL PERMITTING



2.4 Housing Vacancy Trends

Housing vacancy data is one of the most difficult to acquire components used to estimate and project District population. Changes in housing vacancy rates can result in falling populations, or population increases without any additional residential construction. In the past, data collected by the Real Estate Center at ASU was used to track such information, but departmental changes in 2011 brought an end to the report used. The search for another data source led Applied Economics to the U.S. Postal Service vacancy survey. The United States Department of Housing and Urban Development (HUD) has an agreement with the U.S. Postal Service (USPS) to receive data on addresses identified by the Post Office as having been vacant the previous quarter. This data is processed by using the 2010 Census as a benchmark and applying changes in vacancy rates, rather than using absolute numbers of housing units. The raw USPS data is also reviewed by individual Census Tracts to identify data anomalies, with adjustment factors applied to resolve them.

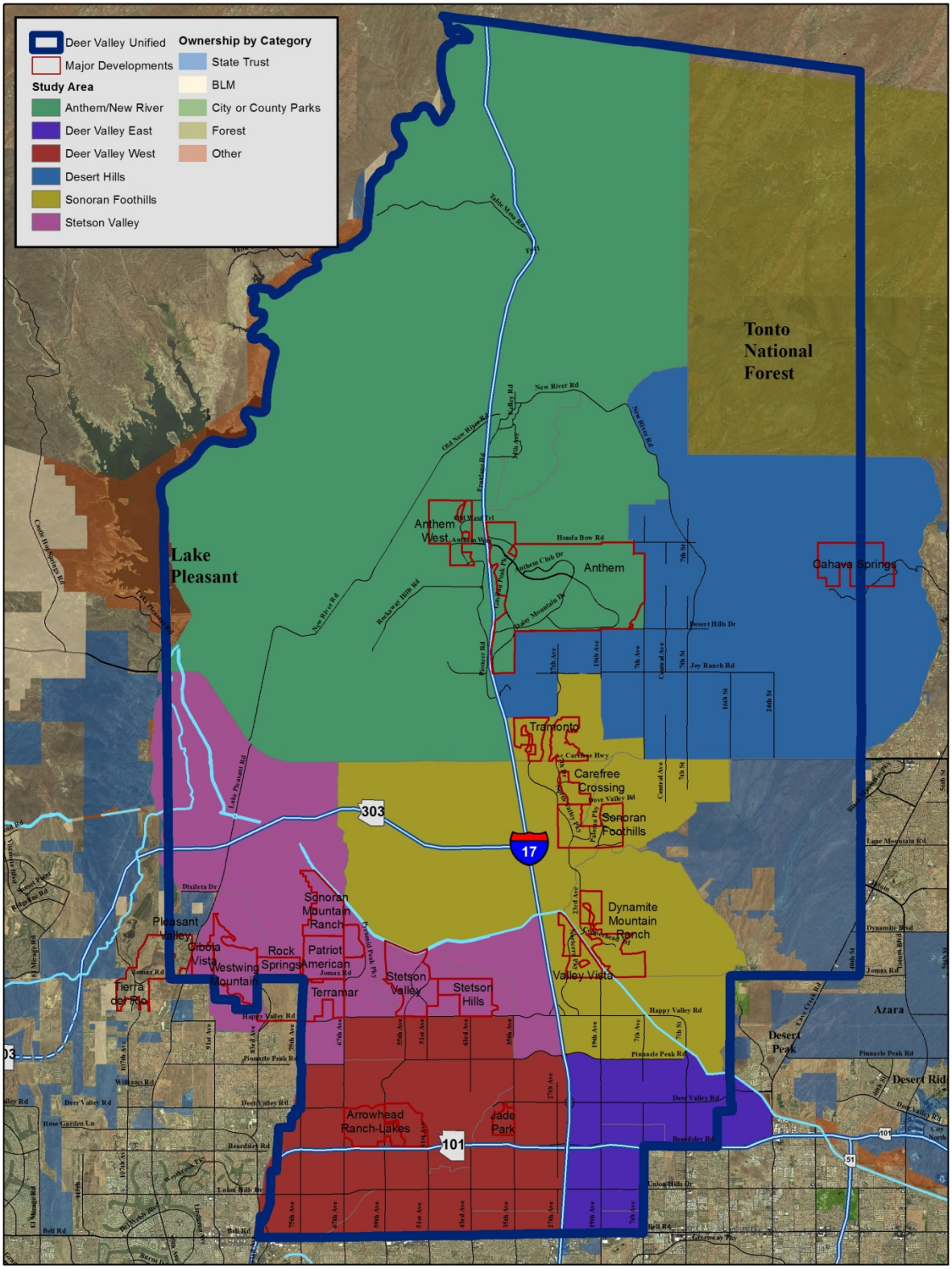
The study areas defined for the Deer Valley School District are shown on **Map 2**. The geographic definitions are meant to group similar areas, increasing the relevance of the data shown on **Table 5**. Overall, the data indicates measurable improvements in housing vacancy rates as the economy has improved. Changes in the Desert Hills area have not been as pronounced, suggesting some lingering issues in this rural area. Anthem is likely impacted by seasonal vacancies, though the long term trend is a decline in vacancies. Sonoran Foothills has seen a significant amount of new growth, which usually translates into higher vacancy rates, but housing absorption there is clearly strong. The more established areas in the southern and western portions of the District are benefiting from the improving economy and seeing rapidly falling housing vacancies.

TABLE 5
HOUSING VACANCY TRENDS

Year	Quarter	Deer Valley East	Deer Valley West	Stetson Valley	Sonoran Foothills	Anthem/New River	Desert Hills
2010	1	10.8%	7.5%	7.0%	12.7%	15.9%	9.7%
2010	2	10.8%	7.4%	6.7%	10.8%	15.8%	9.5%
2010	3	11.0%	7.1%	6.3%	9.8%	15.5%	9.1%
2010	4	10.6%	7.4%	6.1%	10.1%	15.5%	9.8%
2011	1	9.7%	7.6%	6.0%	9.5%	15.2%	10.3%
2011	2	9.6%	7.3%	6.4%	9.0%	15.0%	10.1%
2011	3	8.5%	6.6%	6.5%	8.9%	15.3%	11.7%
2011	4	8.0%	6.7%	6.1%	8.5%	15.2%	11.3%
2012	1	7.2%	6.5%	5.7%	8.1%	14.5%	11.0%
2012	2	6.9%	6.5%	5.2%	7.9%	14.3%	10.8%
2012	3	7.9%	6.8%	5.1%	7.9%	14.4%	10.5%
2012	4	7.6%	6.4%	4.8%	8.1%	14.4%	10.5%
2013	1	7.2%	6.2%	4.5%	7.6%	14.1%	10.2%
2013	2	6.5%	5.9%	4.1%	9.0%	14.2%	10.0%

Source: U.S. Department of Housing and Urban Development; U.S. Postal Service;
U.S. Bureau of the Census; Applied Economics, 2013.

TABLE 5
HOUSING VACANCY RATE AREAS



3.0 RESIDENTIAL DEVELOPMENT POTENTIAL

The future residential development potential within the Deer Valley District is currently estimated to be about 40,000 units. **Table 6** shows the development potential by type of housing product and the estimated time period expected for the **beginning** of construction, although developments often take a number of years to actually complete. Over half of the active projects are in the "Custom/Infill" category, which are generally rural, or infill projects that are likely to be under development intermittently over a number of years. Examples of this could include the rural area between Anthem and Carefree Highway, or any infill potential in the southern portion of the District, which is already substantially developed. Both the number of units and the timing will change as new information is acquired.

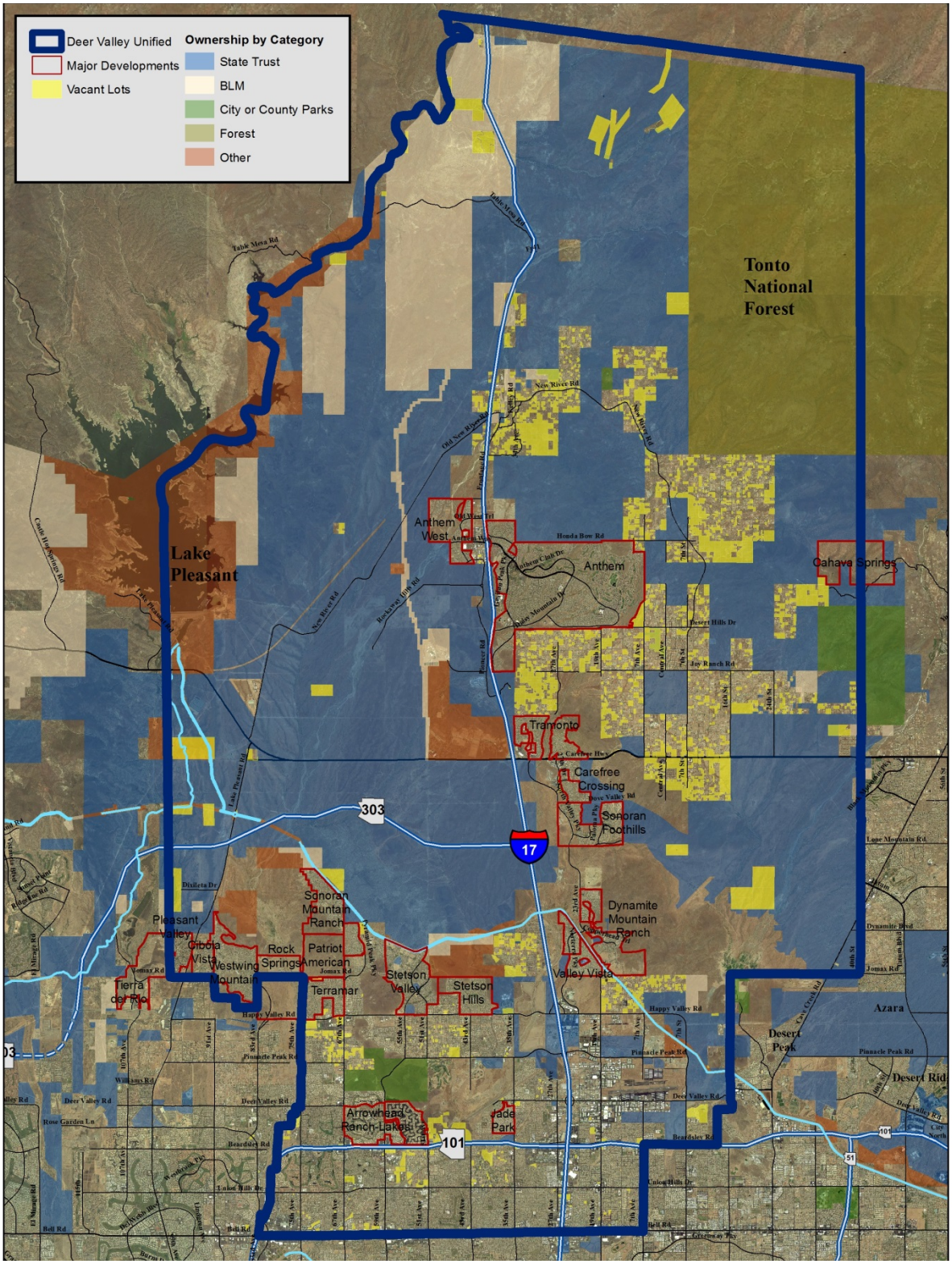
TABLE 6
POTENTIAL NEW HOUSING BY DEVELOPMENT TIMELINE

	Active	Custom/	Vacant Land					
Housing Type	Projects	Infill	1 Year	2-3 Years	3-5 Years	5-10 Years	10+ Years	Total
Non-Retirement Housing								
Single Family .1 - 2 du/ac	661	2,349	28	75	550	52	104	3,819
Single Family 2.01 - 3.5 du/ac	408	527	122	346	897	3,037	22,578	27,915
Single Family 3.51 - 4.5 du/ac	98	-	223	1,288	-	-	1,440	3,049
Single Family 4.51 - 6 du/ac	5	-	-	-	-	-	-	5
Single Family 6.01du/ac & Over	-	-	-	-	-	400	-	400
Single Family Attached	-	-	-	-	-	-	-	-
Total Single Family	1,172	2,876	373	1,709	1,447	3,489	24,122	35,188
Multifamily to 12 du/ac	-	-	-	-	-	-	-	-
Multifamily 12.0 du/ac & Over	999	-	-	192	-	1,170	2,895	5,256
Total Multifamily	999	-	-	192	-	1,170	2,895	5,256
Total	2,171	2,876	373	1,901	1,447	4,659	27,017	40,444

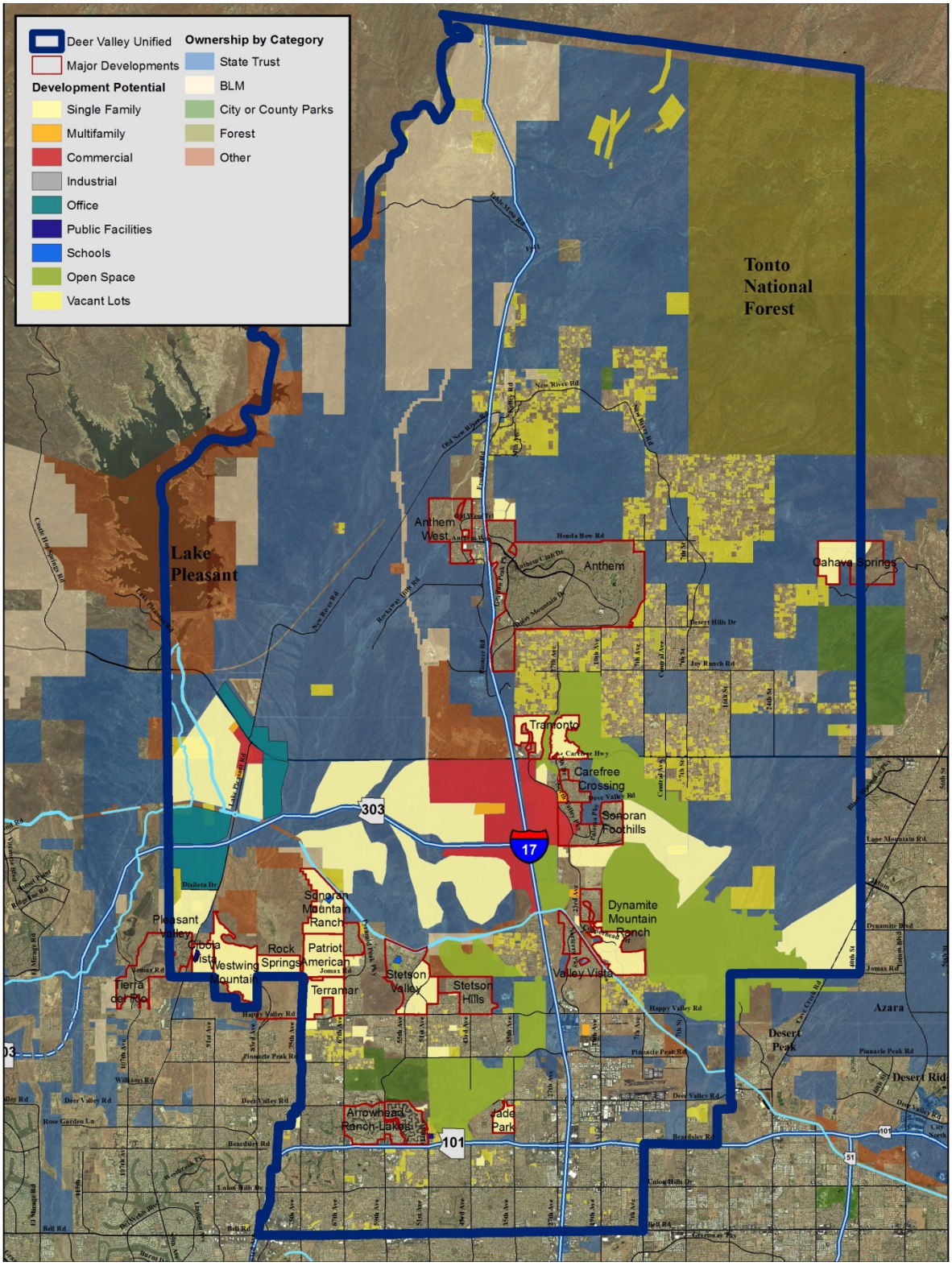
Sources: Cities of Phoenix, Glendale, Peoria; Town of Cave Creek;
Maricopa Association of Governments; Applied Economics, 2013.

The following series of maps illustrate the location of identified development potential. **Map 5** shows vacant lots, many of which are available for housing development, and in general are included in the "Custom/Infill" category. **Maps 6 and 7** show currently active and future development areas by land use and the estimated timing to begin development, as presented on the table above. These maps also include the potential development for some, though not all, of the land controlled by the State.

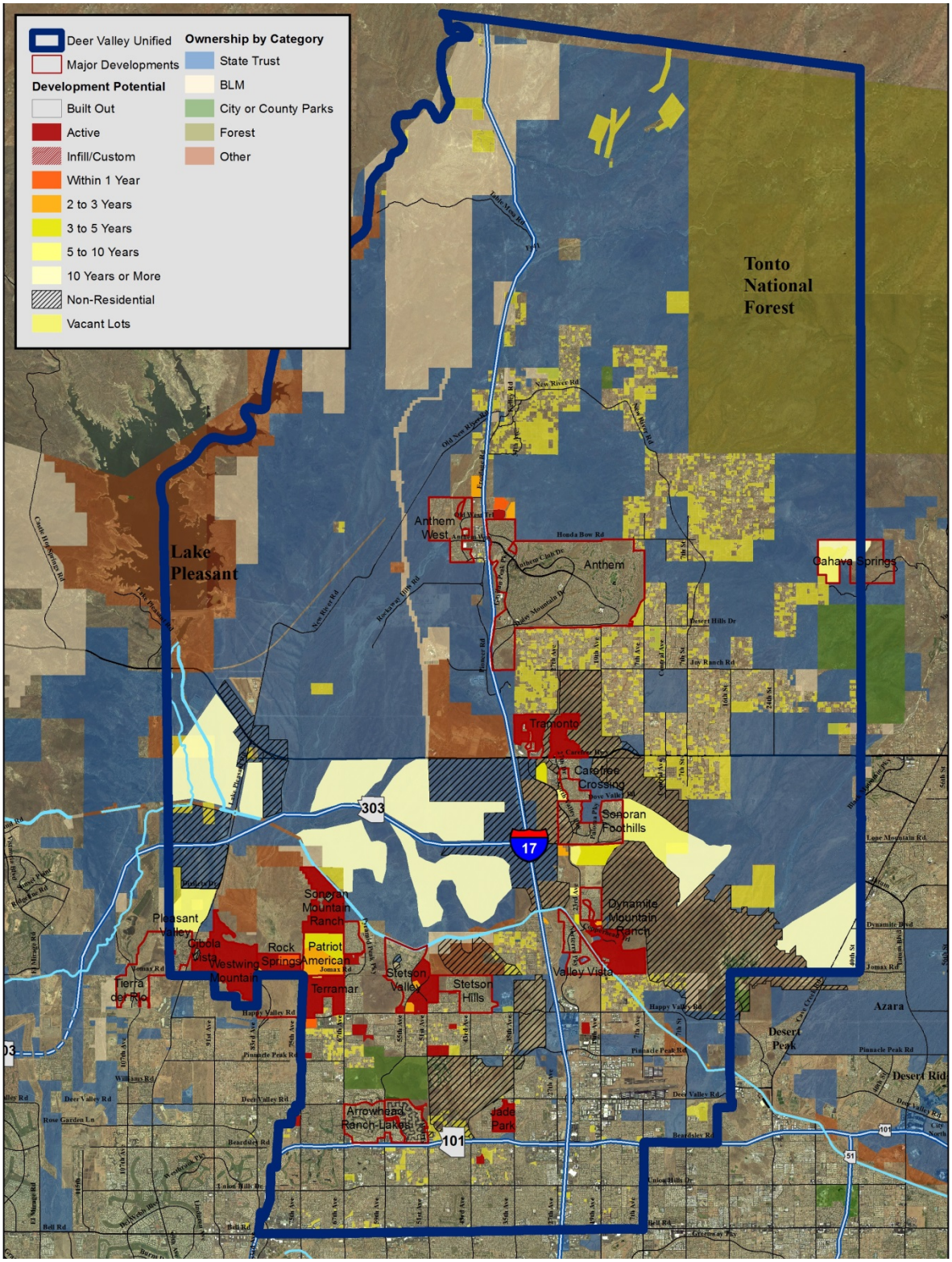
MAP 5
VACANT LAND PARCELS



MAP 6
FUTURE LAND USE

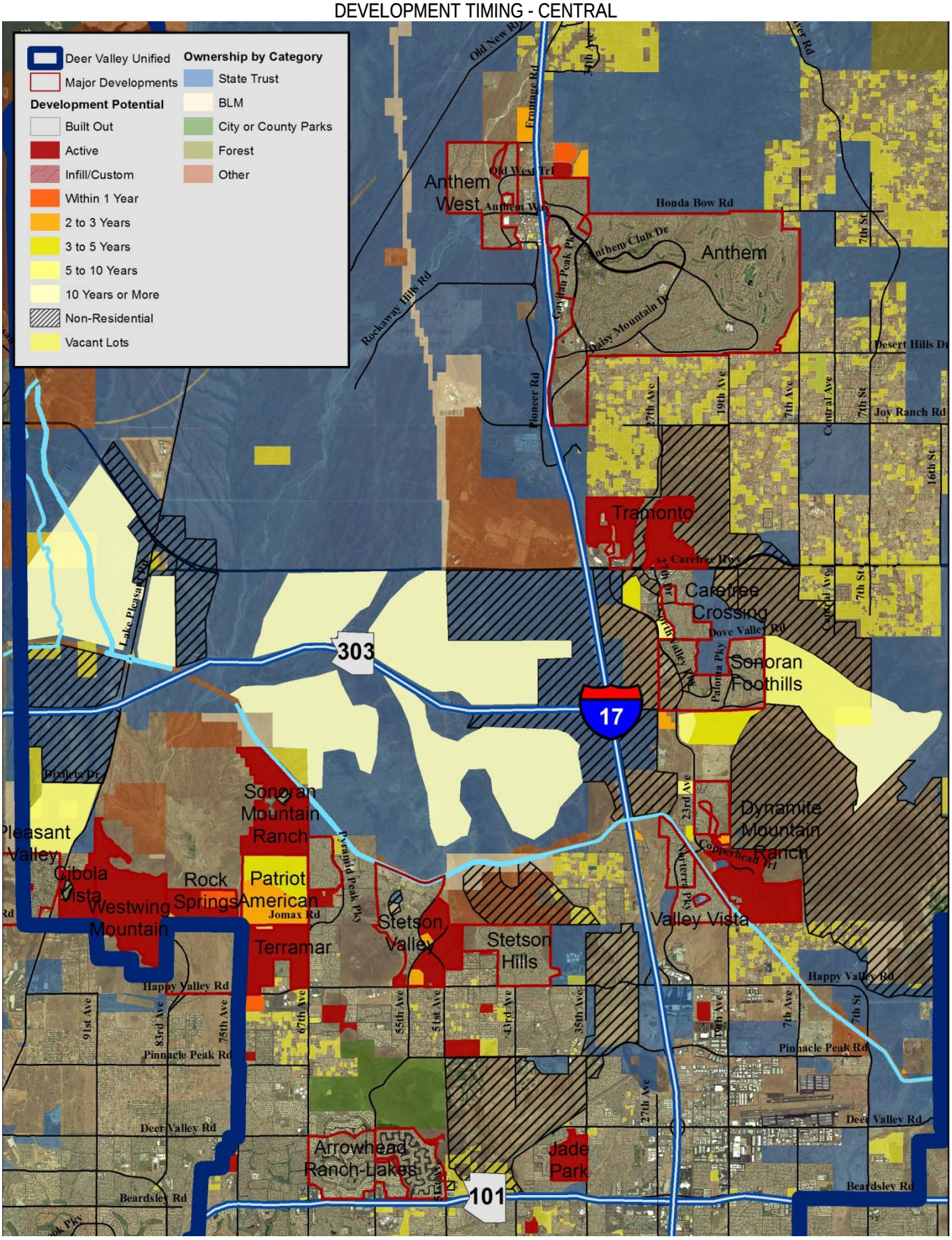


MAP 7
DEVELOPMENT TIMING



Map 8 provides a more focused view of the primary, current and future development areas in the District.

MAP 8
DEVELOPMENT TIMING - CENTRAL



The 24,000 housing units added to District inventory in the past decade are indicative of the desirability of the area, but there will be differences in the local housing market in the next ten years. As seen previously, most current housing activity is taking place in major development projects, generally defined as 160 acres or more. There are about a dozen of these in the District that are nearly 80 percent built-out, without a replacement supply of similar developments anticipated. There are three developments containing over 2,000 units: Dynamite Mountain Ranch, Stetson Valley, and Tramonto, and they are between 86 and 96 percent completed. Cibola Vista, Sonoran Mountain Ranch, Terramar, and Westwing Mountain are all over 90 percent complete.

Despite the level of completion, there remains a considerable amount of supply in projects already started or nearing starting, and that will be the focus of activity in the near term. With the remainder of the major projects, plus the new Rock Springs development and the Patriot American land which hasn't begun development yet, there are over 3,000 housing units remaining to be built in major projects. There will also be continued activity in a few smaller subdivisions and on custom or infill parcels.

Stetson Valley had the most activity in 2012/13 with over 120 single family units permitted, though the current subdivisions by Pulte and K Hovnanian Homes are nearly built out. There are two state land parcels in this master planned community, but these are not being pursued for acquisition at this time. It is expected that these parcels, estimated to total just under 200 lots, will be purchased and construction will begin within the next 2-3 years if the current economic recovery continues.

Dynamite Mountain Ranch was also very active in 2012/13, with just under 100 single family lots permitted by Pulte and Taylor Morrison Homes. New areas of land are being prepared for construction while building continues elsewhere (right: Ridge View subdivision). The pace of construction is expected to increase this year with build-out of Dynamite Mountain Ranch to be reached in 2015/16.



The basic pattern in housing development in this recovery period has been for builders to purchase finished lots in existing subdivisions as a start. When the market bottomed out there were ample supplies of finished lots in the Valley. As the supply of available lots becomes exhausted, opening new subdivisions within the larger, established communities is pursued. These parcels often have at least some basic work already done, such as initial grading, and perhaps outer walls. Streets and other infrastructure still need to be installed, and this is a major expense. Following the housing market collapse and recession, builders have been understandably reluctant to make large investments in land or infrastructure without confidence in recouping the investment in a reasonable period of time. So it is very encouraging that in the Deer Valley District, the construction of housing has been accelerating and new parcels of land are being prepared for additional housing construction.

Another major project with increased development activity is Rock Springs, located at Jomax Road from 75th to 83rd Avenue. This development opened in 2006 but soon became nearly inactive as the recession worsened. In 2012, significant activity started again, and the community is quickly expanding. Currently, K Hovnanian, Richmond American, Courtland, and Lennar Homes have all acquired lots in this development. As with Dynamite Mountain Ranch, active house construction is taking place while new subdivisions are being prepared. Courtland Homes is preparing new lots for construction (right), and Lennar Homes has opened two new subdivisions, with the first closings scheduled for October 2013. It is expected that construction will be strong throughout the development, with build-out occurring in about 2016/17.



As mentioned previously, the first two stages in the housing recovery are building on existing finished lots, and then preparing new lots in existing developments. The next stage is preparing raw land for a new development. A limited liability company called Patriot American AZ owns approximately two square miles of property at the northeast and southwest corners of Jomax Road and 75th Avenue in Peoria (the southwest corner property is in the Peoria Unified District). The property in the Deer Valley District is in process, with submittals for 12 preliminary plats consisting of 1,100 single family lots on 311 acres. After platting, construction drawings and the design review process, it will probably be at least two years before house construction can begin. The remaining property in the District consists of hillside property and will be more difficult to develop. An estimated 550 lots could be added with that property.



Just north of Anthem, development is proceeding at Arroyo Norte with both construction and lot preparation. Meritage Homes began construction in late 2012 and permitted 40 of the 100 lots in their subdivision in the 2012/13 year. Richmond American is preparing ground (left) and installing infrastructure for parcels that will add another 122 lots. A smaller phase will follow.

There have been some other new cases of rezoning around the District, though small and without any timing for construction. These include 150 single family lots at Carefree Highway east of Interstate 17, and 200 lots at Sonoran Desert Drive, also east of Interstate 17. A 202-lot parcel on the west side of Interstate 17 just north of the Anthem outlet mall is also expected to begin development in the next few years.

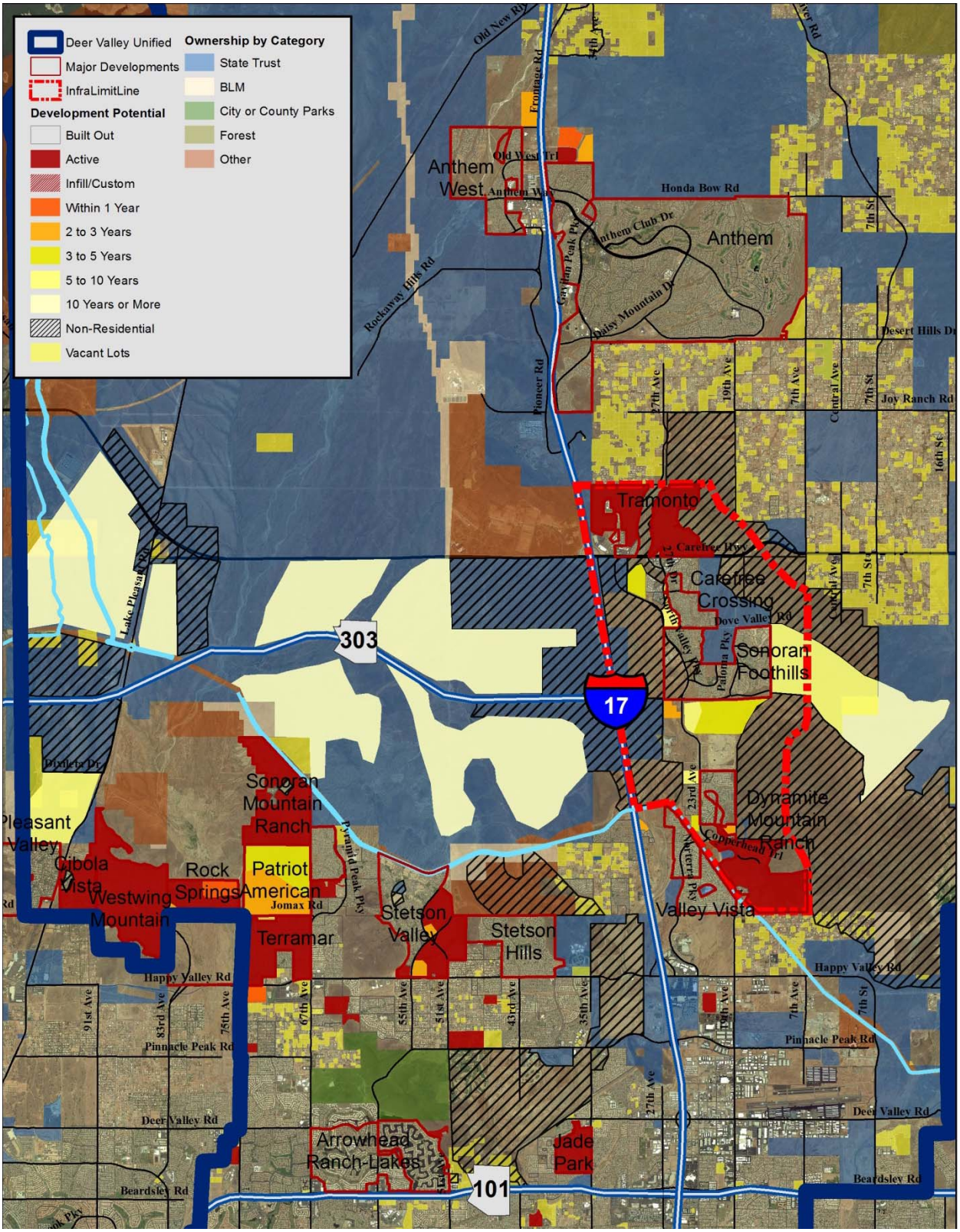
The conditions for growth include demand and the ability to meet it. The demand for new housing in the District is evident from the declining availability. The economic recession certainly depressed the housing market here, as everywhere, but demand was fairly resilient, given the difficult circumstances. At least a portion of the declining housing starts can probably be attributed to subdivisions being completed. Although the District is located on the northern edges of the metropolitan region, it has very good freeway access to Desert Ridge, the Interstate 17 corridor and Glendale. The completion of the Loop 303 in 2015 will open accessibility to the far west Valley. Additionally, the area at the confluence of I-17, Loop 101, and the Deer Valley Airport is a significant employment center. The USAA complex is also a major employment center with about 3,000 employees with construction underway (right) to add 380,000 square feet of space to house an additional 1,000 new employees in 2014-15.



Meeting the demand for population and housing growth involves the availability of land, and its location. Development potential in the North Valley is not limited to land within the District. To the east, in the Paradise Valley School District, is the Desert Ridge master planned community which still has 5-6,000 potential housing units that could be built. To the west, in the Peoria District, is Vistancia. There are still several hundred lots remaining in the southern portion of the community and a bridge to cross the CAP canal that is under construction will open in late 2013, providing access to up to 3,500 lots with construction expected to begin in late 2014. Of course, there are other developments in the North Valley as well. The same freeways that provide access for the District also connect to other areas of potential housing.

An additional issue in the North Valley within the City of Phoenix is the existence of an Infrastructure Limit Line, shown in red on **Map 9**. In response to escalating infrastructure costs due to "leapfrog" development, the Phoenix City Council established boundaries in the 1990's to help manage growth. Within the boundary, major infrastructure was provided by the City. But in order for the City to recoup those costs, development needed to occur only within the boundary and not outside of it. This was managed by not subsidizing any other major infrastructure installations outside of the boundary limit. However, as development has occurred within the boundary and additional infrastructure has been provided, the City is now considering an expansion of the Infrastructure Limit Line. This study process by the planning department is only in the beginning stages and will not be completed for months. While it is premature to form any firm conclusions, some reasonable opinions can be considered. There are no services present west of Interstate 17, while east of Interstate 17 has existing development, so it would seem likely that an expanded development area would be in that direction, possibly east of the Sonoran Foothills or Tramonto developments, where there is proximity to existing infrastructure connections. In addition, there are tentative future plans to expand water and sewer service capacity west of Interstate 17, but only in the Anthem West area, east of New River.

MAP 9
INFRASTRUCTURE LIMIT LINE



The major tracts of land available for future development are those currently controlled by the State Land Department. Future development of such land in Phoenix will be impacted by the infrastructure line. There is also state land in Peoria along Lake Pleasant Road that does not have this constraint.

The State Land Department does not anticipate any major sales of state property in the next five years or more, in part because of the infrastructure limits in Phoenix. Peoria does not have such limits, but it is felt that there will be no movement on state land along Lake Pleasant Road until the economic recovery is more solidly established and the local area is more fully built out.

In consideration of these various factors, it is expected that housing development in the District will drop off slightly in the near term as current major developments reach build-out. Increased demand due to the desirability of the area, and improved employment, will prevent any large decreases and help stabilize the local market. A short and shallow decrease in construction is expected as more developments build out and there is a lag before new state land parcels are opened. As an estimate, consider at least four to five years until conditions warrant any major state land sales, then add a minimum of two years or more for the auction, planning, zoning, platting, and development of infrastructure on raw land, and it becomes apparent that major development on state land is likely to take place fairly late in the projection period.

There are two factors that could change that estimate. One is simply that some builder will move ahead on a specific property that cannot be foreseen at this time. A more likely scenario is that some of the massive amounts of land currently planned for various commercial uses will be converted to residential development. This could drive up housing starts ahead of the development of the outlying tracts of state land. In either case, once the sales and development of the state land begins, the level of new residential development should increase and be sustained.

Another trend occurring in the district is the refurbishing of existing multi-family development. It is not known at this time if the refurbishing of these complexes indicates a long-term trend, but there are other similar properties that would seem to be good candidates for remodeling. Once an area starts to improve, it is likely to continue to do so. Most of the new multifamily housing in the District is unlikely to have many school-age children since many of the projects are located in areas that would be unlikely to develop as anything other than high-end apartments or office/retail developments. While the redevelopment of small multi-family complexes will likely not add any significant number of students individually, these properties are being changed from vacant to occupied housing, and there are other similar properties in the southern portion of the District.





4.0 DISTRICT-LEVEL PROJECTIONS

In this section of the report, the enrollment, demographic, and development information is integrated in order to project changes to District-level enrollment. The level of projected change is based on our housing growth forecast, occupancy rates, and per household student-age population generation rates. Due to the pronounced demographic and development differences that exist among the different areas of the District, the District-level projections are derived from the projections by District sub-area as presented in Section 5.0 of this report. This methodology leads to the creation of ten-year enrollment projections by grade for Kindergarten through 12th grade.

4.1 Housing & Population

Table 7 provides annual housing, household and population projections through 2023/24 based on the projected annual absorption of new housing units and real estate market and demographic trends. The housing unit construction schedule developed for the 10-year period by Applied Economics is based on recent construction trends, ownership, and data reflecting the cyclical nature of economic growth in the District. These projections result in a total housing inventory of about 105,100 units in 2023/24, up about 6,800 units from the 2013/14 inventory. This would result in a District-wide population of about 264,100 people in 2023/24, an increase of about 19,100 persons.

More important than the number of new housing units, is the number of **occupied** housing units, or households. In the mid-2000's, the District housing occupancy rate was about 96 percent, but decreased as the economic recession deepened, reaching a low of 90.4 percent by 2010/11. It rebounded slightly in the last several years, but only to about 91.4 percent. Because of this, the number of households increased slightly less than the number of new housing units that were added to inventory for several years during the recession. However, this trend reversed in 2011/12 as occupancy rates stabilized. The number of new households is expected to continue to outstrip housing unit additions through 2021/22 as housing occupancy rates continue to increase and eventually level off at about 93.5 percent.

While 6,800 new housing units are to be added over the next ten years, the number of households is expected to be just over 8,400, based on the combination of new units and higher occupancy rates. However, both the population per household and school-age population per household are both expected to continue to decline slowly. While new housing growth remains moderate, the existing population is "aging in place" due to real estate market conditions and general demographic trends. As a result, school-age population is expected to increase by only 1,500 despite the creation of 8,400 new households.

TABLE 7
PROJECTED POPULATION AND HOUSING

Year	Population	Housing Units		Occupancy	Vacant	Households		Pop/HH
		Total	New	Rate	Units	Total	Change	
2000/01	159,234	60,589		93.7%	3,807	56,782		2.804
2001/02	167,889	63,825	3,236	93.9%	3,893	59,932	3,150	2.801
2002/03	176,833	67,112	3,287	94.1%	3,960	63,152	3,221	2.800
2003/04	189,129	71,359	4,248	94.7%	3,782	67,577	4,425	2.799
2004/05	204,714	76,877	5,518	95.3%	3,613	73,264	5,687	2.794
2005/06	221,817	82,905	6,028	96.0%	3,316	79,589	6,325	2.787
2006/07	235,226	89,027	6,122	95.0%	4,451	84,576	4,987	2.781
2007/08	240,276	92,097	3,069	94.0%	5,526	86,571	1,995	2.775
2008/09	238,433	93,618	1,521	92.0%	7,489	86,128	-443	2.768
2009/10	239,696	95,624	2,007	91.0%	8,606	87,018	890	2.755
2010/11	239,040	96,493	869	90.4%	9,276	87,217	199	2.741
2011/12	240,482	96,765	272	90.8%	8,902	87,863	646	2.737
2012/13	242,885	97,604	839	91.1%	8,687	88,917	1,055	2.732
2013/14	245,026	98,249	645	91.4%	8,449	89,800	882	2.729
2014/15	247,012	98,833	584	91.7%	8,203	90,630	830	2.726
2015/16	248,951	99,397	564	92.0%	7,952	91,445	815	2.722
2016/17	251,354	100,183	786	92.3%	7,714	92,469	1,024	2.718
2017/18	253,745	101,011	828	92.6%	7,475	93,536	1,067	2.713
2018/19	255,790	101,649	638	92.9%	7,217	94,432	896	2.709
2019/20	257,584	102,186	537	93.2%	6,949	95,237	805	2.705
2020/21	260,004	103,004	818	93.5%	6,695	96,309	1,071	2.700
2021/22	261,439	103,714	710	93.5%	6,741	96,973	664	2.696
2022/23	262,781	104,371	657	93.5%	6,784	97,587	614	2.693
2023/24	264,143	105,055	684	93.5%	6,829	98,226	640	2.689
2014/15 - 2023/24			6,806				8,427	

Source: Applied Economics, November 2013.
*Bolding Indicates Actuals

4.2 School-Age Population & Capture

Between 2000 and 2010, enrollment increased by 36 percent or 9,100 students, while school-age population (persons age 5 to 17) residing within District boundaries increased by 42 percent or 13,900 students. Since 2010, enrollment has dropped by 6 percent, or about 1,900 students, despite a slight increase in school-age population during the same period.

In addition to the volume and market orientation of household growth, trends in per-household student generation rates and capture rates are key factors used in determining future enrollment levels as shown in **Table 8**. The first element, student generation, refers to the expected size of the school-age population, 5 to 17 years old, per household. The average number of school-age persons per household has decreased from a high of 0.582 in 2000/01 to just 0.529 currently. The District is expected to experience continued declines in student generation rates, falling to 0.499 by 2023/24 (**Figure 3**).

Because of the increasing number of educational alternatives and mostly unrestricted open enrollment policies, it is necessary to apply a "capture rate", or enrollment to population ratio, to the school-age population to project enrollment. While households may be generating, on average, 0.529 school-age persons that does not necessarily equate to an equivalent amount of enrollment. Please note that in this analysis the capture rate is based on the **net difference** between the school-age population and District enrollment. This includes the loss of some in-district school-age persons to other providers, and the addition of students from outside the district.

At the present time, the District attracts 1,400 students from outside the District's boundaries, meaning that only about 31,600 of the District's 47,500 school-age persons attend District schools. This would imply an internal capture rate of 67 percent of the resident school age population. With out-of-district students included, the net capture rate rises to 0.70 with a net loss of about 14,500 students. The level of out-of-district enrollment is assumed to remain at current or similar levels. This is a somewhat of a limiting factor, but projecting out-of-district enrollment fluctuations include many factors that are beyond the scope of this study.

In 2000/01, the District's capture rate was at a high of 0.78, meaning that 78 percent of the school-age population of the District was attending District schools. That level was very typical for a suburban area that also featured a variety of private and parochial schools. Since that time, increasing open enrollment—and especially the introduction and proliferation of public charter schools—has impacted the in-district capture rates for public school districts. Open enrollment causes a shifting of students between districts, with gains and losses offsetting each other to varying degrees, but charter schools only subtract from districts. The capture rate in Deer Valley had fallen to 74.9 by 2009/10. At that time the District eliminated all day Kindergarten and as a result the capture rate declined even more rapidly to 69.5 percent by 2013/14. As a result of the elimination of all-day Kindergarten, some of the students who would have attended Kindergarten at District schools began to attend charter schools or schools in neighboring districts like Paradise Valley that continued to offer all-day Kindergarten. While a portion of these students returned to Deer Valley for 1st grade, it is likely that a sizeable percentage simply continued at the school where they started, resulting in a continued decline in capture rates.

As a result of this information and work by District administrators, the Deer Valley School Board has elected to resume free full-day starting in 2014/15. This decision was made after our draft report was released. Therefore, the projections in this Final Draft report have been adjusted to account for a re-capture of some students. The number of students, expected to be about 180 next year and nearly 400 over four years, will continue to roll through the subsequent grades as time goes by. As a result, the capture rate is expected to stabilize during the projection period, even as competition increases, resulting in somewhat higher levels of enrollment.

TABLE 8
SCHOOL AGE POPULATION AND ENROLLMENT

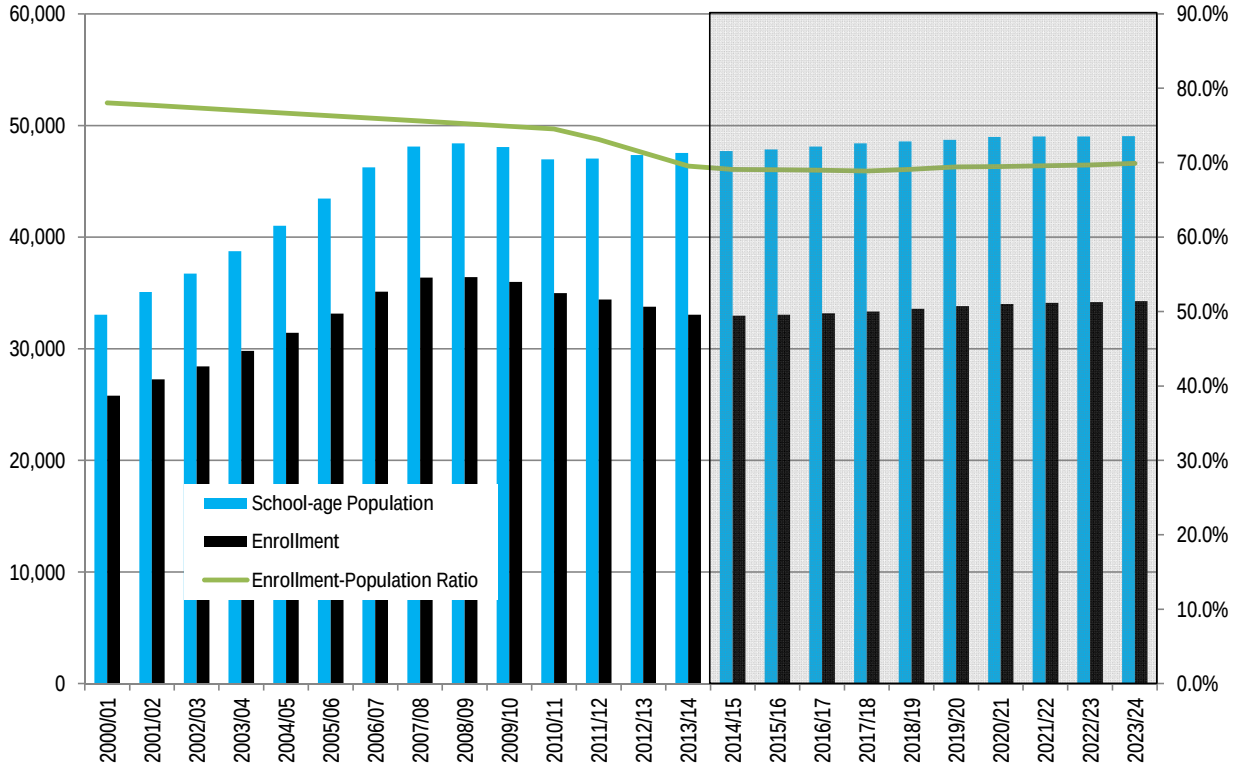
Year	Households	School-Age Population *		K-12 Enrollment		Net Difference	Enrollment - Population Ratio
		Total	Per Household	Total	Per Household		
2000/01	56,782	33,047	0.582	25,792	0.454	7,255	0.780
2001/02	59,932	35,081	0.585	27,257	0.455	7,824	0.777
2002/03	63,152	36,732	0.582	28,411	0.450	8,321	0.773
2003/04	67,577	38,719	0.573	29,812	0.441	8,907	0.770
2004/05	73,264	41,009	0.560	31,432	0.429	9,577	0.766
2005/06	79,589	43,444	0.546	33,146	0.416	10,298	0.763
2006/07	84,576	46,234	0.547	35,113	0.415	11,121	0.759
2007/08	86,571	48,117	0.556	36,375	0.420	11,742	0.756
2008/09	86,128	48,385	0.562	36,408	0.423	11,977	0.752
2009/10	87,018	48,052	0.552	35,989	0.414	12,063	0.749
2010/11	87,217	46,950	0.538	34,985	0.401	11,965	0.745
2011/12	87,863	47,034	0.535	34,400	0.392	12,634	0.731
2012/13	88,917	47,332	0.532	33,763	0.380	13,569	0.713
2013/14	89,800	47,532	0.529	33,054	0.368	14,478	0.695
2014/15	90,630	47,700	0.526	32,947	0.364	14,753	0.691
2015/16	91,445	47,854	0.523	33,048	0.361	14,806	0.691
2016/17	92,469	48,113	0.520	33,182	0.359	14,931	0.690
2017/18	93,536	48,387	0.517	33,329	0.356	15,058	0.689
2018/19	94,432	48,568	0.514	33,570	0.355	14,998	0.691
2019/20	95,237	48,696	0.511	33,814	0.355	14,882	0.694
2020/21	96,309	48,955	0.508	34,006	0.353	14,949	0.695
2021/22	96,973	49,001	0.505	34,098	0.352	14,903	0.696
2022/23	97,587	49,019	0.502	34,170	0.350	14,849	0.697
2023/24	98,226	49,046	0.499	34,279	0.349	14,767	0.699

Source: Applied Economics, December 2013.

* Population age 5 through 17, corresponds with Kindergarten through 12th grade.

Bolding indicates historical data.

FIGURE 3
PROJECTED ENROLLMENT: 2000/01-2023/24



4.3 Charter and Private School Enrollment

Public school districts face increasing competition for students from charter and private schools, as well as from neighboring public school districts through open enrollment policies. Charter schools report enrollment to the state but it is difficult to learn of new schools prior to opening. Over time, charter schools also move, change names, or go out of business, which also creates tracking difficulties. However, school lists and enrollment data have been compiled, and while there are issues with the data due to reporting lags, the data is from the Arizona Department of Education and is generally deemed accurate and provides a striking view of the situation.

In the 2012/13 school year, there were 21 charter schools operating within the Deer Valley School District boundaries, serving 6,500 K-12 students. That includes two virtual schools, which may have little or no impact on the District. The schools are listed on **Table 9** with their addresses. Within a mile of the District boundaries are an additional 8 charter schools totaling about 3,200 K-12 students.

Private schools do not have the reporting requirements charter entities do so data is often less accessible, although enrollments tend to not fluctuate as much as in charter schools, and the schools are generally more stable. There are 7 private schools located within the District boundaries totaling 1,509 students. Within about a mile of the District are an additional 5 private schools with total enrollment of about 2,000 students, including pre-kindergarten.

TABLE 9
2012/13 ENROLLMENT IN LOCAL NON-DISTRICT SCHOOLS BY SCHOOL

School Name	Address	City	Zip	Total K-12
Charter Schools				
Adams Traditional Academy	2323 W. Parkside Lane	Phoenix	85027	681
AMCS at Anthem dba Caurus Academy	41900 N. 42nd Ave.	Anthem	85086	315
Calibre Academy of Glendale	4744 W. Grovers	Glendale	85308	196
Canyon Pointe Academy	4941 W. Union Hills Dr.	Glendale	85308	406
Challenge Charter School	5801 W. Greenbriar Dr.	Glendale	85308	655
Core Continental	17340 N. 63rd Ave	Glendale	85308	21
Deer Valley Academy	18424 N. 51st Ave	Glendale	85308	24
E-Institute at Grovers	4744 W. Grovers Ave.	Glendale	85308	35
E-Institute at Union Hills	3515 W. Union Hills	Phoenix	85308	156
Great Hearts Academies - Anthem Prep	42101 N. 41st Dr.	Phoenix	85086	501
Great Hearts Academies - Glendale Prep	7201 W. Beardsley Rd.	Glendale	85308	342
Happy Valley School	7140 W. Happy Valley Rd.	Peoria	85383	746
Imagine Bell Canyon	18052 N. Black Canyon Hwy.	Phoenix	85053	455
Inspire Education, A Mission Charter School	19602 N. 23rd Ave.	Phoenix	85020	102
Ombudsman - Charter West	3624 W. Bell Rd.	Glendale	85308	100
Pinnacle Pointe Academy	6753 W. Pinnacle Peak Rd.	Glendale	85310	352
Ridgeline Academy-A Challenge Foundation Academy, Inc.	33625 N. Valley Parkway	Phoenix	85085	352
Stepping Stones Academy	35812 N. 7th St.	Phoenix	85086	199
Taylion Virtual Academy of Arizona	4744 W. Grovers	Glendale	85308	11
Taylion Virtual High School of Arizona	4744 W. Grovers	Glendale	85308	83
Valley Academy	1520 W. Rose Garden Lane	Phoenix	85027	790
Total				6,522
Private Schools				
School Name	Address	City	Zip	Total PK-12
Arrowhead Christian Academy (K-12)	4030 W. Yorkshire Dr.	Glendale	85308	120
Atonement Lutheran Church and School (PreK-8)	4001 W. Beardsley Rd.	Glendale	85308	212
Caepe School Prepatory (K-8)	39905 N. Gavilan Peak Pky.	Anthem	85086	60
Creative Castle -(PreK-K)	4220 W. Opportunity Way	Anthem	85086	32
Joy Christian School (PreK-12)	21000 N. 75th Ave.	Glendale	85308	662
North Valley Christian Academy (K-8)	42101 N. 41st Dr.	Anthem	85086	200
Pinnacle Pointe Academy (K-6)	6753 W. Pinnacle Peak Rd.	Glendale	85310	223
Total				1,509

Source: Arizona Department of Education; Deer Valley School District; Applied Economics 2013.

Table 10 shows the enrollment in charter schools by grade over the past five years. The number of schools has increased every year except last year, while enrollment has increased by an average of 688 students annually or by 2,750 students since the 2008/09 school year. Enrollment is highest in the earliest grades, with high school enrollment substantially smaller than any of the other grades though with a sharp increase in 12th grade.

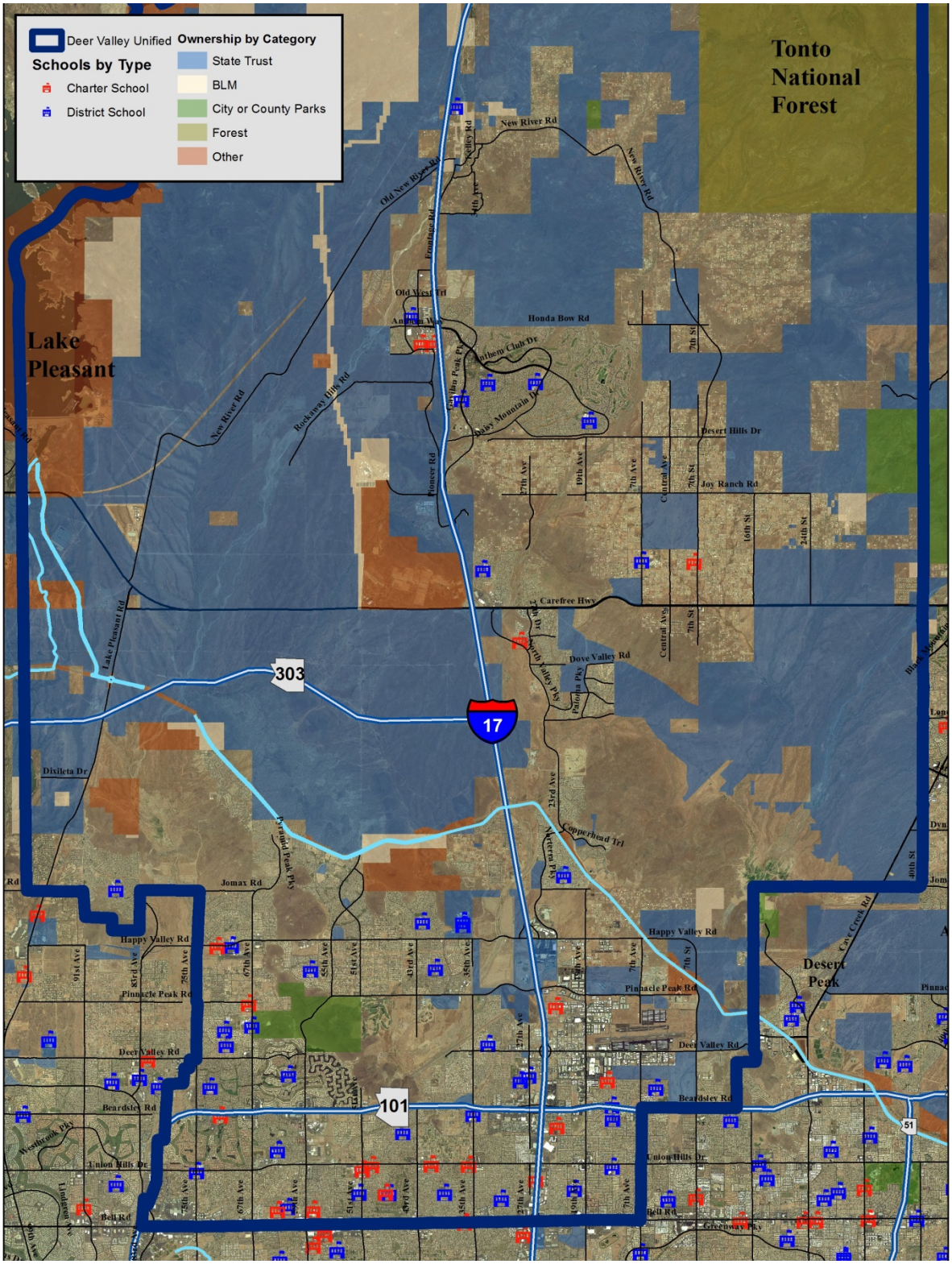
TABLE 10
ENROLLMENT IN LOCAL NON-DISTRICT CHARTER SCHOOLS BY GRADE

School Year	#Schools	KG	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	Total K-12	Annual Change
2008-09	14	582	529	494	478	366	332	314	159	128	86	61	92	151	3,772	
2009-10	16	663	575	530	487	477	385	407	210	162	64	90	105	166	4,321	549
2010-11	19	864	675	624	559	556	516	479	270	215	88	85	143	194	5,268	947
2011-12	23	960	835	713	708	650	560	555	296	243	110	95	129	203	6,057	789
2012-13	21	1,019	899	811	728	708	544	561	332	284	114	114	137	271	6,522	465

Source: Arizona Department of Education; Applied Economics 2013.

As can be seen on **Map 10** the charter schools are generally located near the southern boundary of the District, along arterial streets. It can also be observed that there are also a number of charter schools located outside the District but in close proximity. Besides the 8 schools within a mile of the District there are another 6 within two miles and additional ones farther away.

MAP 10
DEER VALLEY AREA SCHOOLS BY ENTITY TYPE



4.4 Enrollment

As shown on **Table 11**, District enrollment is expected to decline slightly next year, before rising by about 1,200 students over the nine years beyond that. However, if the rate of new construction declines, the aging of the population and associated reductions in the school-age population could still cause enrollment to fall in the later years of the projection period. Overall, the projections with all-day kindergarten result in a net of increase of about 1,200 students over the next 10 years, which is still modest given that nearly 8,500 households could be added in the District during the period.

The recent losses at the K-4 level are expected to reverse in the near term with the addition of free all-day kindergarten, with increases possible over at least the next five years. Later in the projection period, any increases will still be moderated by increased competition from alternative providers. The middle school grades (5-8) should experience small fluctuations during the early part of the projection period before posting some small gains by the end due to the delayed impacts of the increases in the K-5 enrollment. The number of students in grades 9-12 is expected to remain nearly unchanged during the projection period, with slight increases possible during the middle years of the projection period.

TABLE 11
ENROLLMENT BY LEVEL: 2000/01-2023/24

	Enrollment by Level				K-12 Total		
Fall	K-4	5-8	K-8	9-12	Enrollment	Change	% Change
2000/01	10,571	8,365	18,936	6,856	25,792		12.5%
2001/02	11,009	9,001	20,010	7,247	27,257	1,465	5.7%
2002/03	11,408	9,509	20,917	7,494	28,411	1,154	4.2%
2003/04	11,695	9,965	21,660	8,152	29,812	1,401	4.9%
2004/05	12,253	10,391	22,644	8,788	31,432	1,620	5.4%
2005/06	12,721	11,096	23,817	9,329	33,146	1,714	5.5%
2006/07	12,839	11,688	24,527	10,586	35,113	1,967	5.9%
2007/08	13,581	11,989	25,570	10,805	36,375	1,262	3.6%
2008/09	13,627	11,866	25,493	10,915	36,408	33	0.1%
2009/10	13,185	11,824	25,009	10,980	35,989	-419	-1.2%
2010/11	12,499	11,510	24,009	10,976	34,985	-1,004	-2.8%
2011/12	12,335	11,083	23,418	10,982	34,400	-585	-1.7%
2012/13	11,903	10,691	22,594	11,169	33,763	-637	-1.9%
2013/14	11,280	10,583	21,863	11,191	33,054	-709	-2.1%
2014/15	11,251	10,612	21,863	11,084	32,947	-107	-0.3%
2015/16	11,385	10,654	22,039	11,009	33,048	101	0.3%
2016/17	11,549	10,705	22,254	10,928	33,182	134	0.4%
2017/18	11,667	10,578	22,245	11,084	33,329	147	0.4%
2018/19	11,855	10,486	22,341	11,229	33,570	241	0.7%
2019/20	11,870	10,608	22,478	11,336	33,814	244	0.7%
2020/21	11,819	10,804	22,623	11,383	34,006	192	0.6%
2021/22	11,772	11,029	22,801	11,297	34,098	92	0.3%
2022/23	11,743	11,242	22,985	11,185	34,170	72	0.2%
2023/24	11,743	11,231	22,974	11,305	34,279	109	0.3%

Source: Applied Economics, December 2013.
Bolding indicates actuals.

The distribution of enrollment by individual grade is shown in **Table 12**. This table illustrates the impact of the smaller lower grades advancing over the past several years and throughout the projection period. It also shows that in 2000/01 the District had about 2,000 kindergarteners and 1,500 12th graders. By 2013/14, this pattern had reversed, with about 2,000 kindergarteners and 2,600 12th graders. Even as enrollment in the lower grades stabilizes, enrollment in the higher grades will likely continue to be greater due to the overall aging of the population, and the nature of the future housing additions in the District.

TABLE 12
PROJECTED ENROLLMENT BY GRADE: 2000/01-2023/24

Year	PS	K	1	2	3	4	5	6	7	8	9	10	11	12	K-12 Total	Percent Change
2000/01	125	1,996	2,051	2,142	2,207	2,175	2,134	2,150	2,039	2,042	2,039	1,764	1,600	1,453	25,792	423.7%
2001/02	174	1,911	2,295	2,202	2,221	2,380	2,300	2,346	2,242	2,113	2,122	1,951	1,667	1,507	27,257	5.7%
2002/03	267	2,061	2,274	2,399	2,298	2,376	2,457	2,409	2,352	2,291	2,113	2,050	1,799	1,532	28,411	4.2%
2003/04	233	1,988	2,439	2,336	2,523	2,409	2,468	2,551	2,502	2,444	2,373	2,101	1,961	1,717	29,812	4.9%
2004/05	258	2,210	2,319	2,532	2,503	2,689	2,537	2,630	2,647	2,577	2,527	2,376	2,053	1,832	31,432	5.4%
2005/06	321	2,236	2,584	2,514	2,736	2,651	2,851	2,708	2,762	2,775	2,706	2,536	2,206	1,881	33,146	5.5%
2006/07	352	2,195	2,513	2,645	2,783	2,703	2,938	2,833	3,033	2,884	2,853	2,906	2,514	2,313	35,113	5.9%
2007/08	266	2,538	2,532	2,713	2,854	2,944	2,866	3,083	2,986	3,054	3,000	2,766	2,696	2,343	36,375	3.6%
2008/09	261	2,669	2,658	2,576	2,786	2,938	2,986	2,878	3,042	2,960	3,008	2,862	2,574	2,471	36,408	0.1%
2009/10	308	2,462	2,692	2,624	2,589	2,818	2,919	2,990	2,922	2,993	2,934	2,897	2,684	2,465	35,989	-1.2%
2010/11	297	2,065	2,526	2,667	2,650	2,591	2,768	2,846	2,983	2,913	2,916	2,809	2,711	2,540	34,985	-2.8%
2011/12	343	2,136	2,338	2,585	2,649	2,627	2,523	2,734	2,863	2,963	2,841	2,847	2,712	2,582	34,400	-1.7%
2012/13	403	2,005	2,371	2,331	2,539	2,657	2,577	2,476	2,744	2,894	2,992	2,827	2,782	2,568	33,763	-1.9%
2013/14	412	1,939	2,190	2,293	2,350	2,508	2,611	2,588	2,619	2,765	2,854	2,979	2,696	2,662	33,054	-2.1%
2014/15	411	2,099	2,127	2,242	2,363	2,420	2,541	2,664	2,711	2,696	2,814	2,832	2,864	2,574	32,947	-0.3%
2015/16	412	2,200	2,245	2,183	2,317	2,440	2,458	2,600	2,798	2,798	2,752	2,797	2,724	2,736	33,048	0.3%
2016/17	414	2,207	2,328	2,325	2,276	2,413	2,500	2,537	2,755	2,913	2,881	2,747	2,696	2,604	33,182	0.4%
2017/18	416	2,168	2,317	2,403	2,416	2,363	2,465	2,573	2,680	2,860	2,990	2,871	2,646	2,577	33,329	0.4%
2018/19	419	2,148	2,284	2,400	2,506	2,517	2,422	2,545	2,727	2,792	2,946	2,985	2,768	2,530	33,570	0.7%
2019/20	422	2,137	2,261	2,364	2,500	2,608	2,577	2,498	2,695	2,838	2,873	2,940	2,877	2,646	33,814	0.7%
2020/21	424	2,142	2,255	2,345	2,469	2,608	2,677	2,665	2,651	2,811	2,927	2,870	2,835	2,751	34,006	0.6%
2021/22	425	2,156	2,258	2,337	2,447	2,574	2,674	2,766	2,826	2,763	2,896	2,923	2,767	2,711	34,098	0.3%
2022/23	426	2,174	2,265	2,332	2,430	2,542	2,631	2,753	2,923	2,935	2,837	2,887	2,816	2,645	34,170	0.2%
2023/24	427	2,188	2,280	2,335	2,420	2,520	2,593	2,704	2,904	3,030	3,008	2,826	2,780	2,691	34,279	0.3%

Source: Applied Economics, December 2013.

5.0 SUB-DISTRICT PROJECTIONS

The purpose of this section is to provide sub-district enrollment projections based on residency of the Deer Valley Unified School District student population, which is based on the grid-level projections, and the attendance at each school. Accordingly, the section begins with enrollment projections by attendance area. These projections form the basis for the district enrollment projections and provide baseline information for comparing enrollment by school with enrollment by attendance area. Matrices showing the relationship between where student live and where they attend are provided for elementary, middle school and high school grade levels.

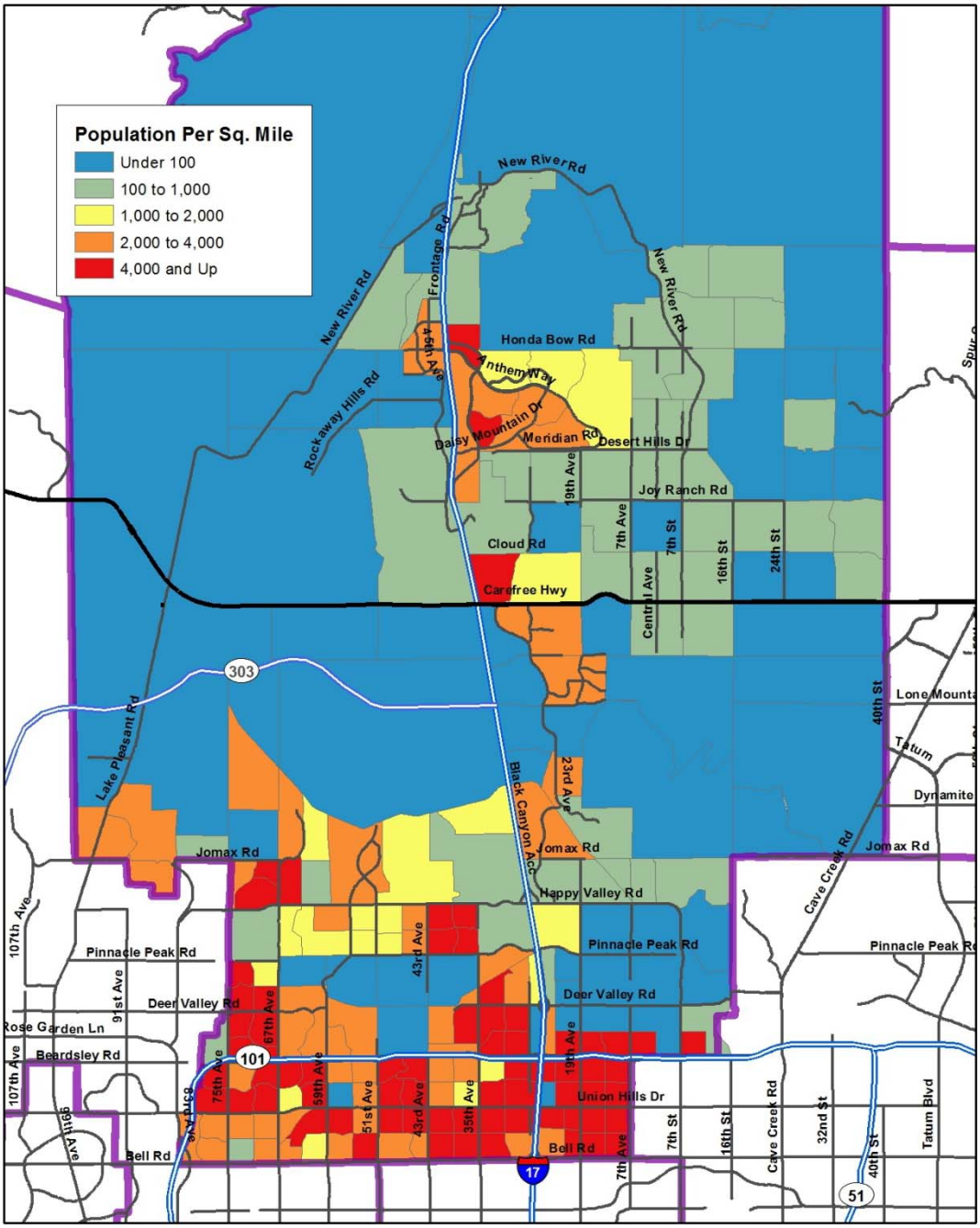
The sub-district analysis also includes detail on the demographic characteristics used to drive the projection of future school age population by attendance area. Trends in these characteristics are used along with historic student information to predict enrollment by residence attendance area and hence enrollment by school.

5.1 Demographic Characteristics

A series of maps were created that geographically illustrate selected 2010 Census data, specifically population per household, school-age population per household, capture rates and householder ages. Such thematic maps help to visualize the underlying population and household characteristics by location and in context to other geographic identities. The data underlying these maps has been utilized to model trends in student generation rates for existing housing and to predict numbers of students resulting from new construction based on population and household characteristics.

One of the most important aspects of understanding enrollment in the District is population density. As shown in **Map 11**, population density varies from under 100 persons per square mile in much of the northern part of the District where there is little or no development, to higher densities along the Loop 101 corridor, areas of lower-cost housing in Anthem, and multi-family developments along Interstate 17.

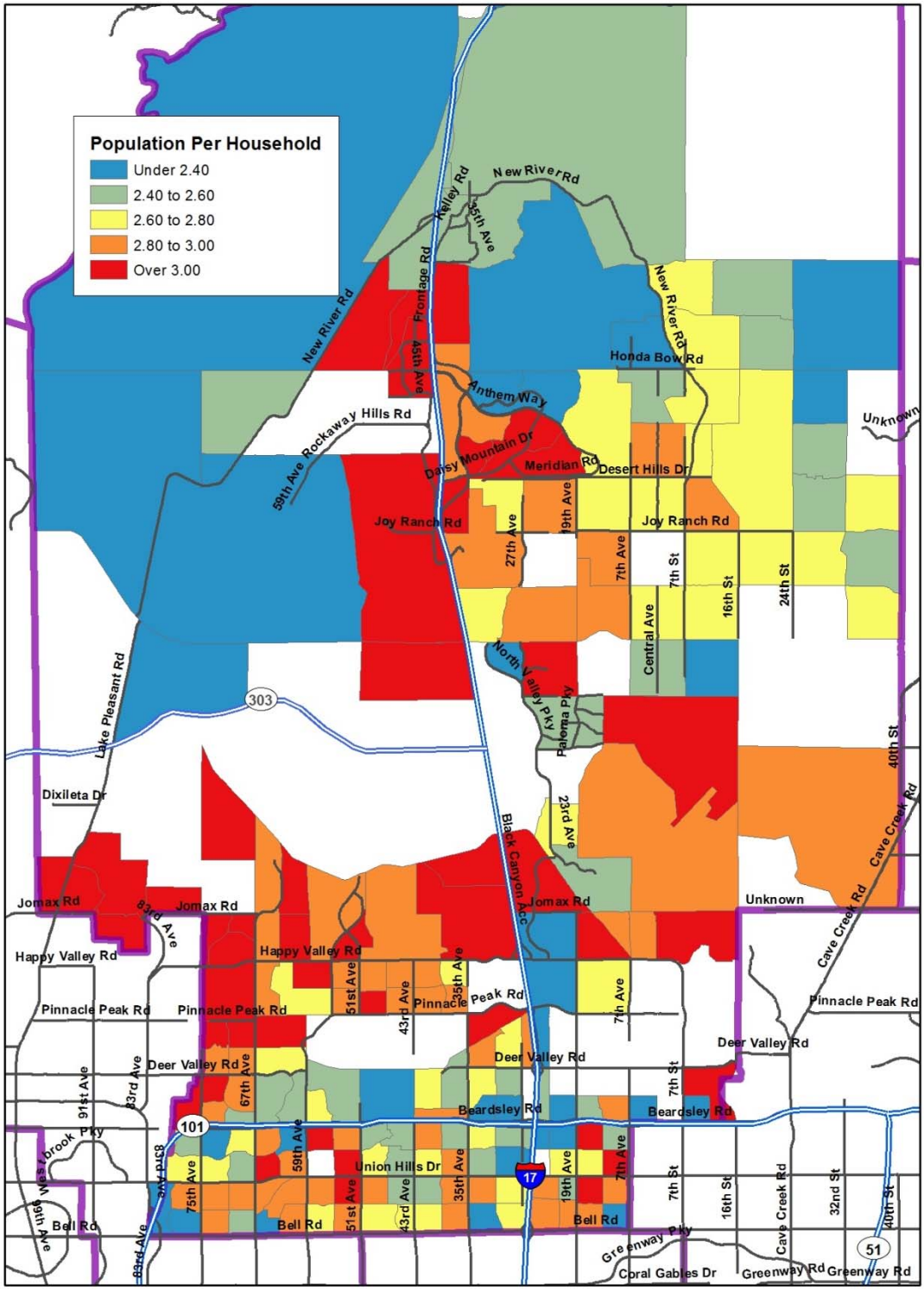
MAP 11
POPULATION DENSITY



While total population is driven primarily by housing density, there are some important differences in population per household. As shown in **Map 12**, the areas with the highest population per household levels are scattered throughout the District, with large concentrations just north of Pinnacle Peak Road between I-17 and 75th Avenue, as well as in the southern and western portion of Anthem. These areas of new, entry-level and move-up housing are attractive to younger families with school-age children, and therefore tend to have an average population per household above 3.0. It is also notable that the area along the 101 corridor, where the District is most densely populated, is peppered with areas of low

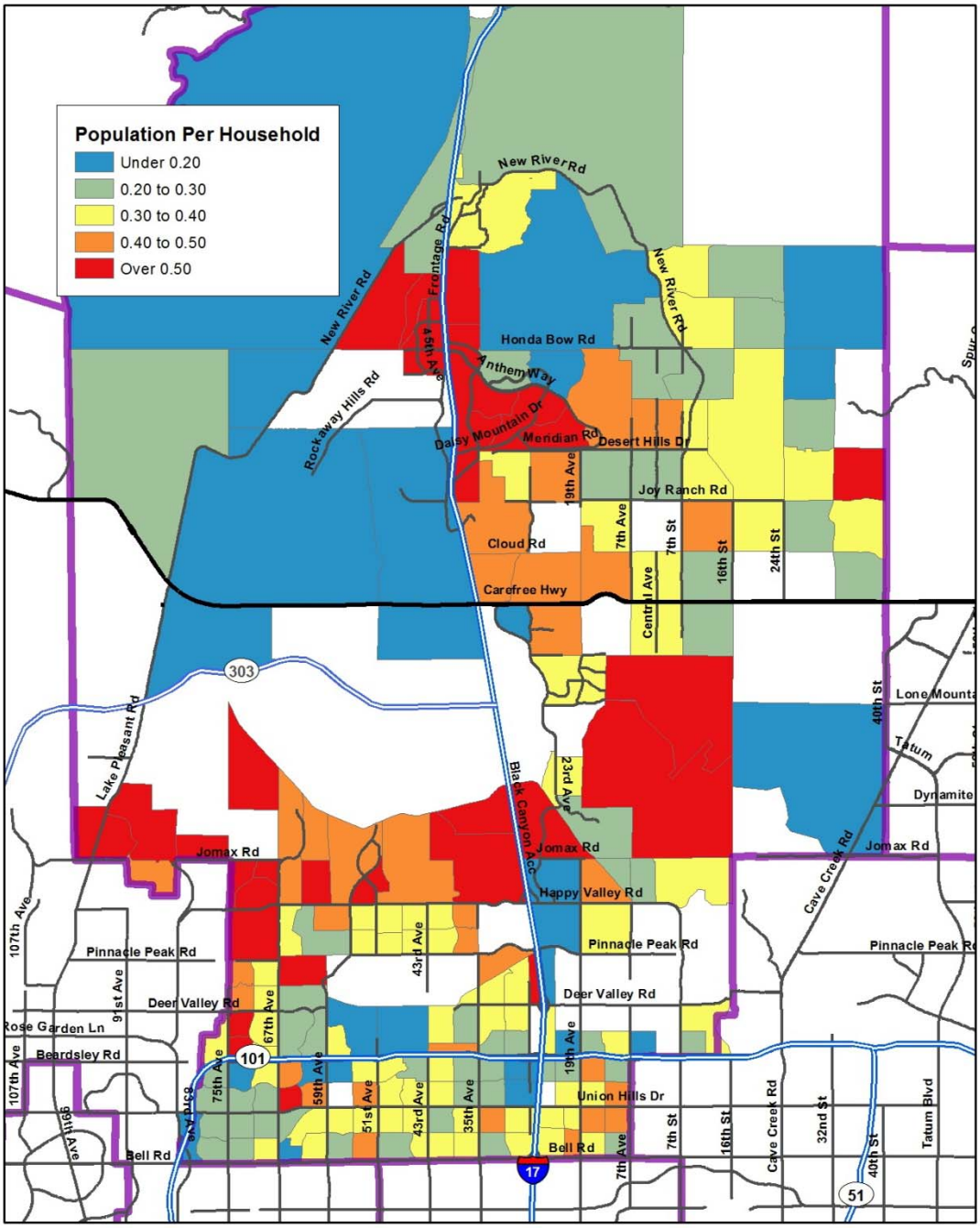
population per household. This can be explained by the maturity of that area and the impact of aging-in-place in more established neighborhoods. Other areas of high density and low population per household include multifamily developments such as Tatum Ranch at Sonoran Foothills (corner of North Valley Parkway and Dove Valley Road). Conversely, there are a number of more rural areas along the west side of I-17, and near the Sonoran Desert Preserve, with low population density, but higher population per household.

MAP 12
POPULATION PER HOUSEHOLD



Maps 13 and 14 show the Kindergarten to 8th grade population per household and the District's capture rate of that population based on comparing the estimated population to actual enrollment by grid.

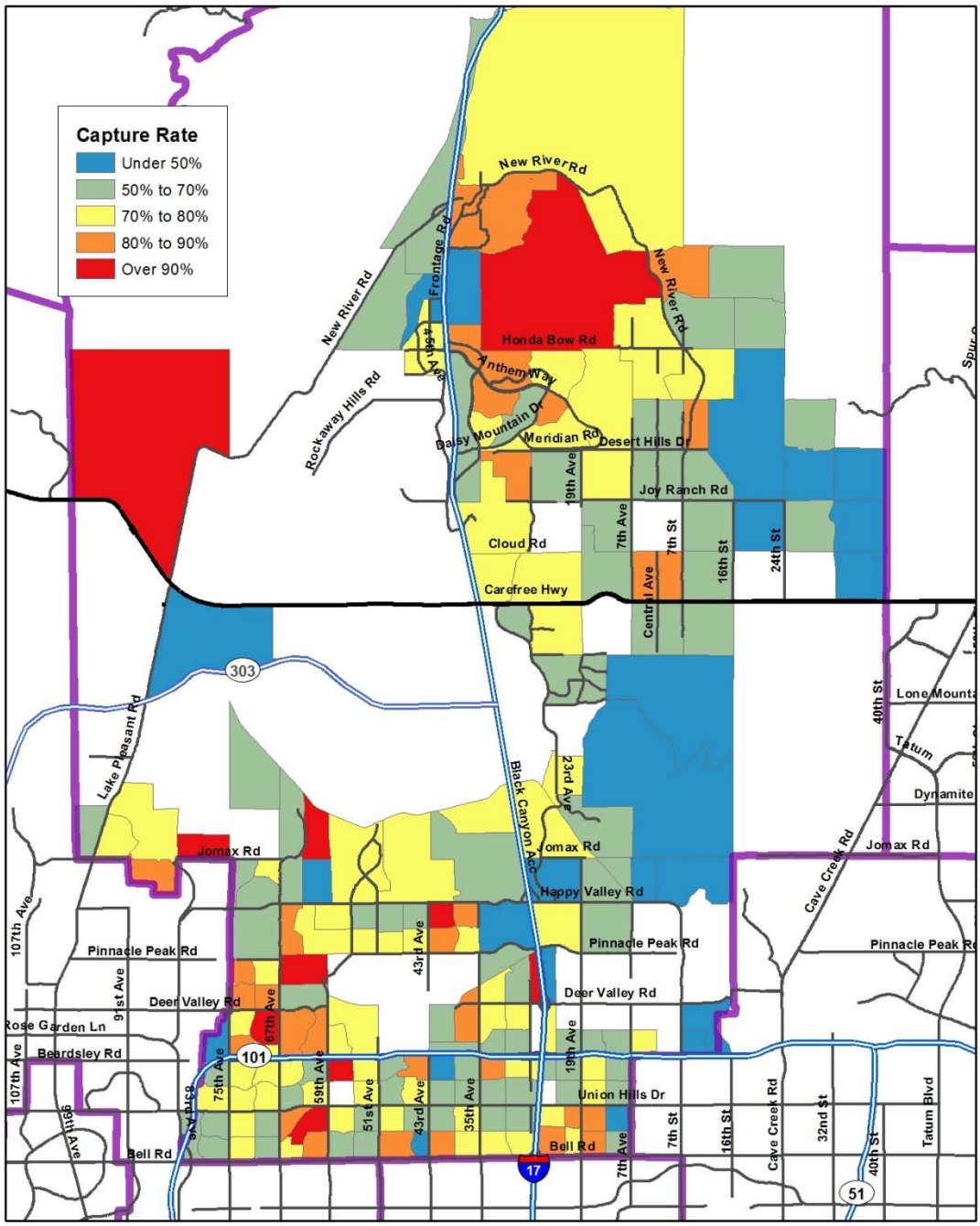
MAP 13
POPULATION AGE 5 TO 13 PER HOUSEHOLD



The spatial pattern of children per household for Kindergarten to 8th grade generally mirrors that of total persons per household. The exception is along the Loop 101 corridor, where the aging population contains significantly fewer K-8 students, even in areas with higher populations per household. The lowest capture rates are found in the eastern portion of the District, where enrollment is lost to Cave Creek in the north and Paradise Valley in the south. The northernmost portion of the District has

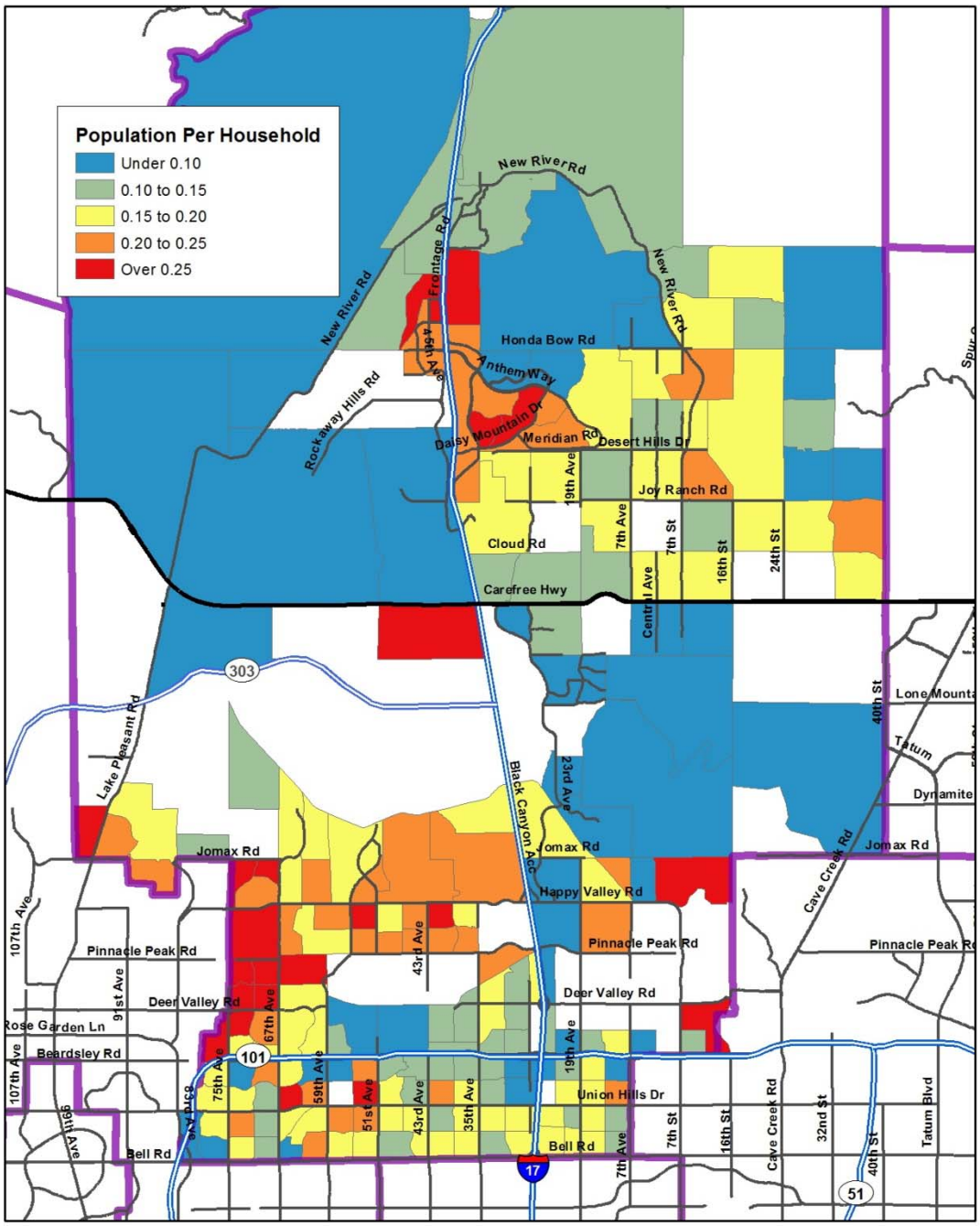
generally high capture rates, but low school-age population per household. The southern part of Anthem, and the southwest part of the District fare better in both student population and capture rates.

MAP 14
POPULATION AGE 5 TO 13 CAPTURE RATE



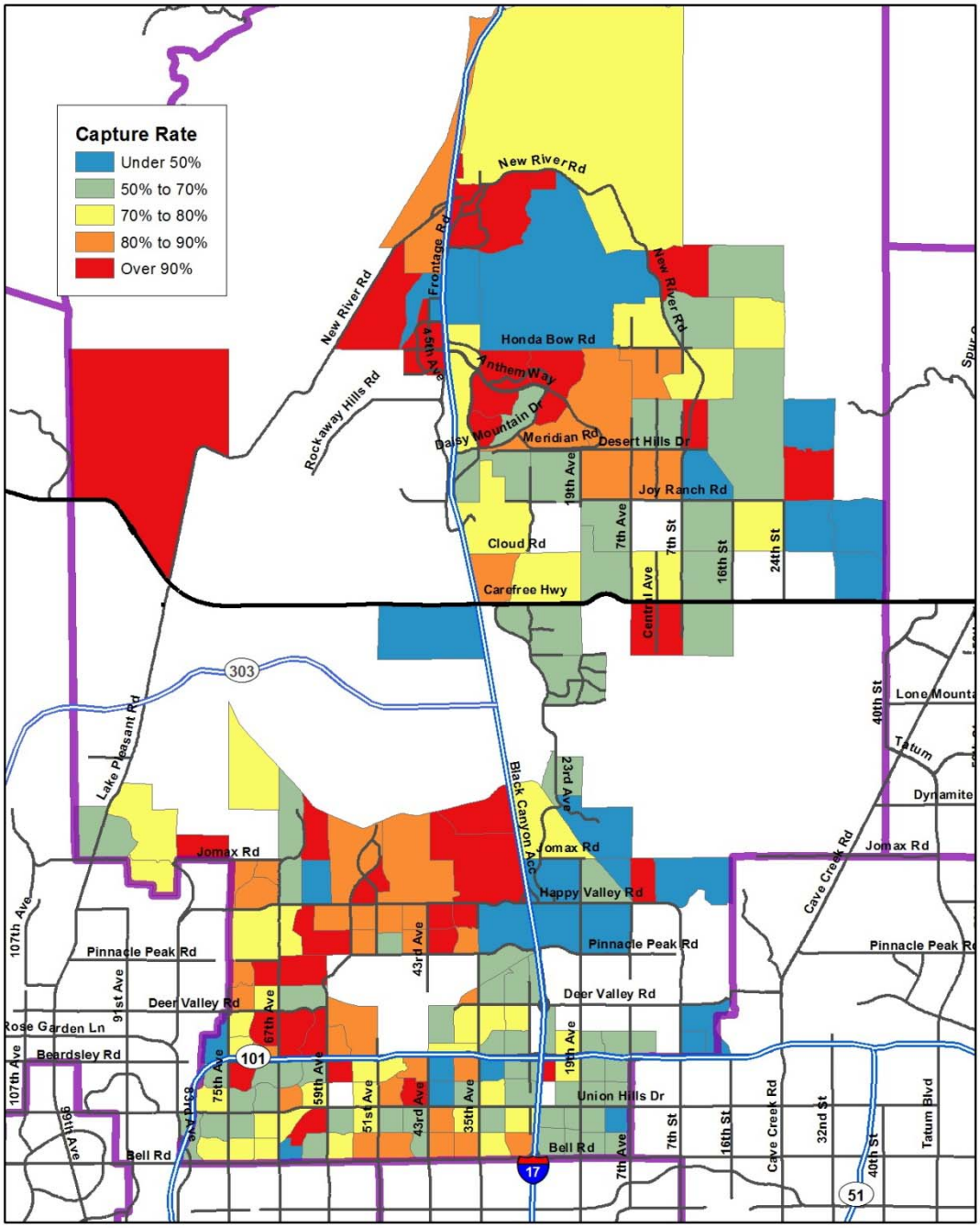
Maps 15 and 16 provide the same data for the 9th to 12th grade populations. High-school student population per household is generally highest in the southwest part of the district, and in the northern area around Anthem. Most of the areas with low high-school student population also have low population density overall. The few pockets where the high-school age population is disproportionately low contain primarily multi-family or age-restricted communities.

MAP 15
POPULATION AGE 14 TO 17 PER HOUSEHOLD



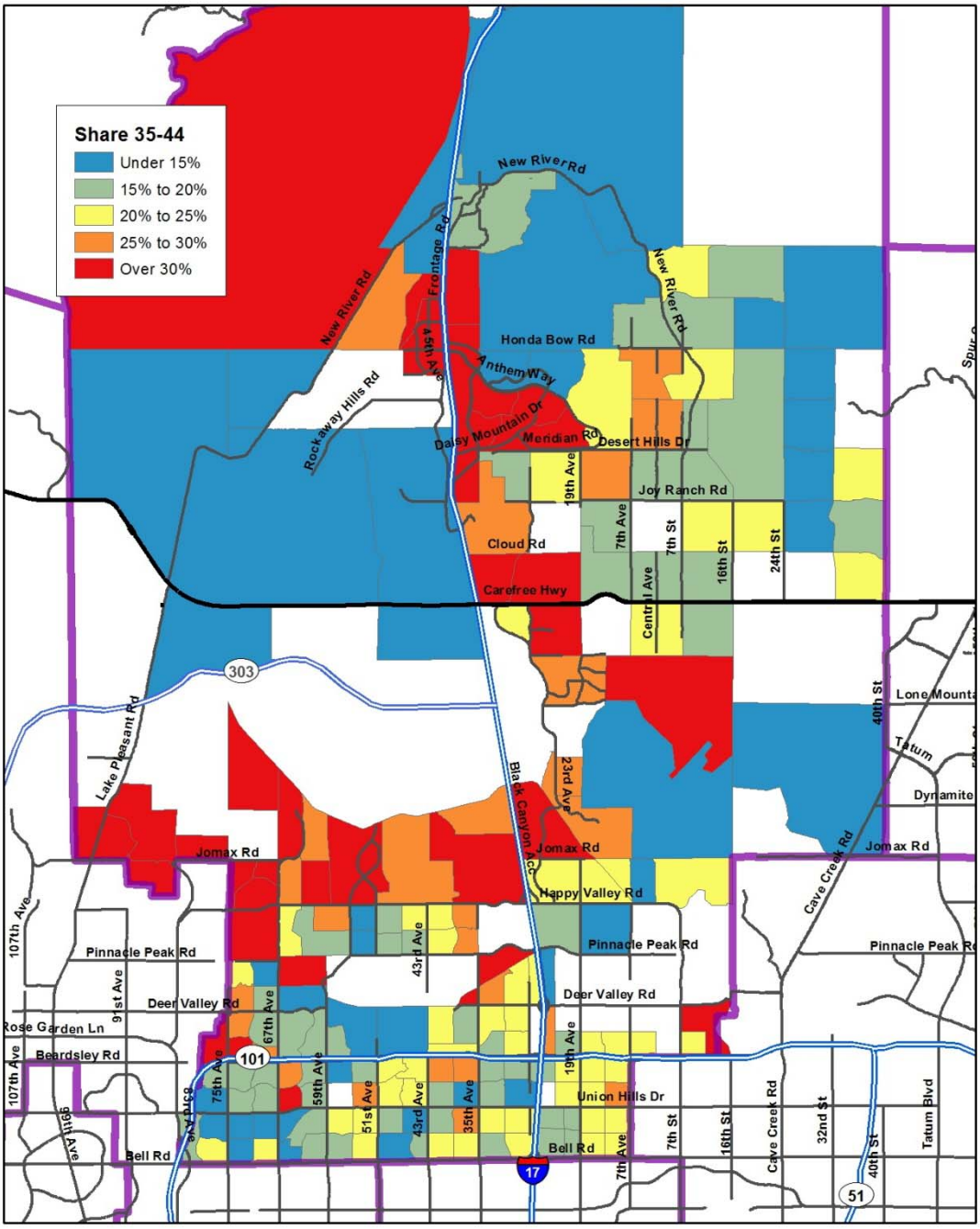
The capture rate for these students is better in the north and southwest parts of the District. There is considerable leakage in the high-school population near the eastern boundary with Cave Creek and Paradise Valley, but generally the capture rate is high in the areas with larger populations per household.

MAP 16
POPULATION AGE 14 TO 17 PER HOUSEHOLD CAPTURE RATE



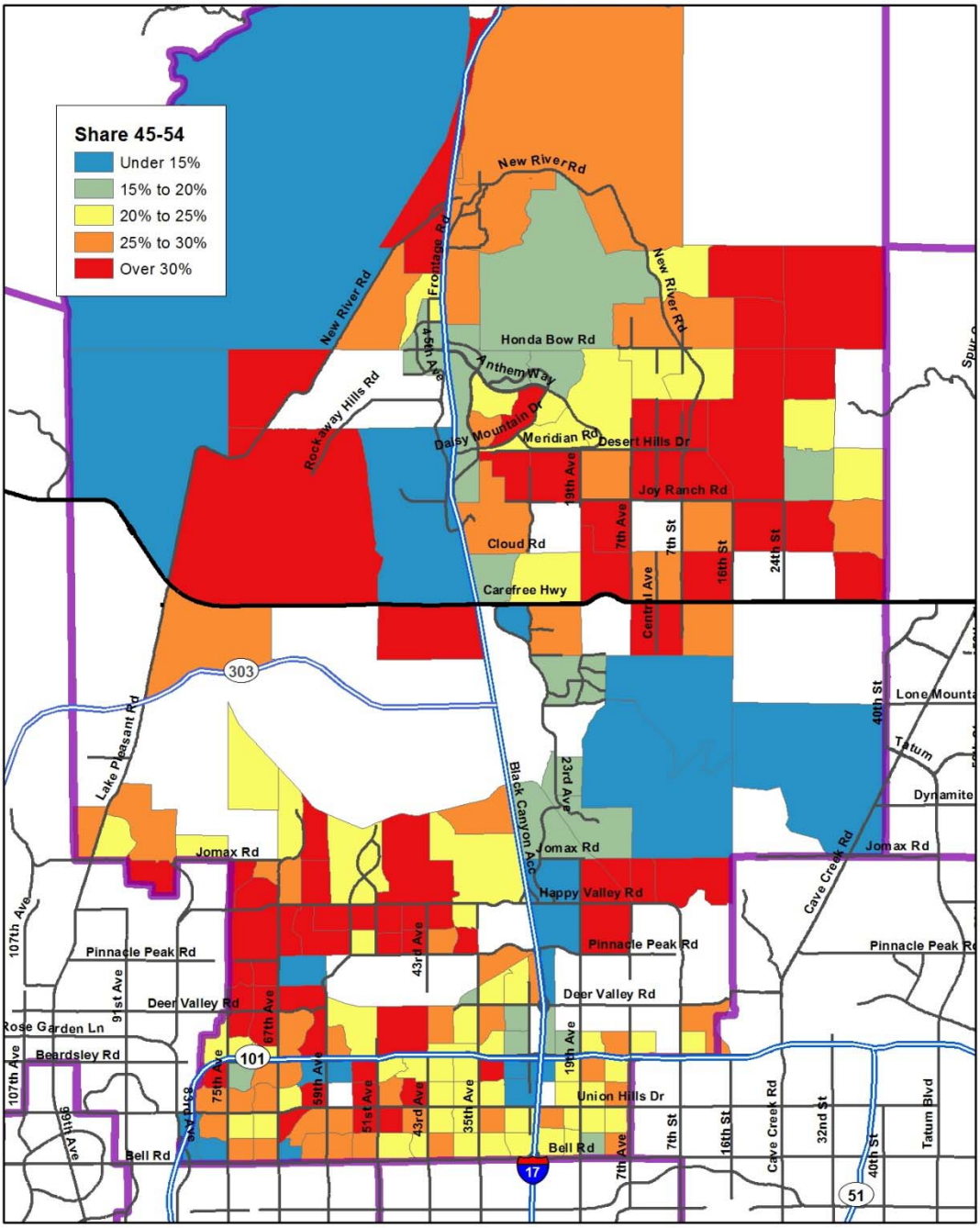
The share of householders in each planning grid that are in the key parent age groups (35 to 44 and 45 to 54) are shown in **Maps 13 and 14**, respectively. The share of householders 35 to 44, which is most important to elementary enrollment, is highest in the areas west of I-17 between Happy Valley Road and the CAP canal, and in the southern half of Anthem, both of which contain a larger share of entry-level housing.

MAP 13
SHARE OF HOUSEHOLDERS AGED 35 TO 44



As might be expected, the share of older householders, those aged 45 to 54 is much more widely distributed. While the southern and northern portions of the District have fairly high concentrations of this age group, the central part of the District, generally between Jomax and Carefree Highway, east of I-17, is limited in terms of householders in the prime age-group for high school-age children.

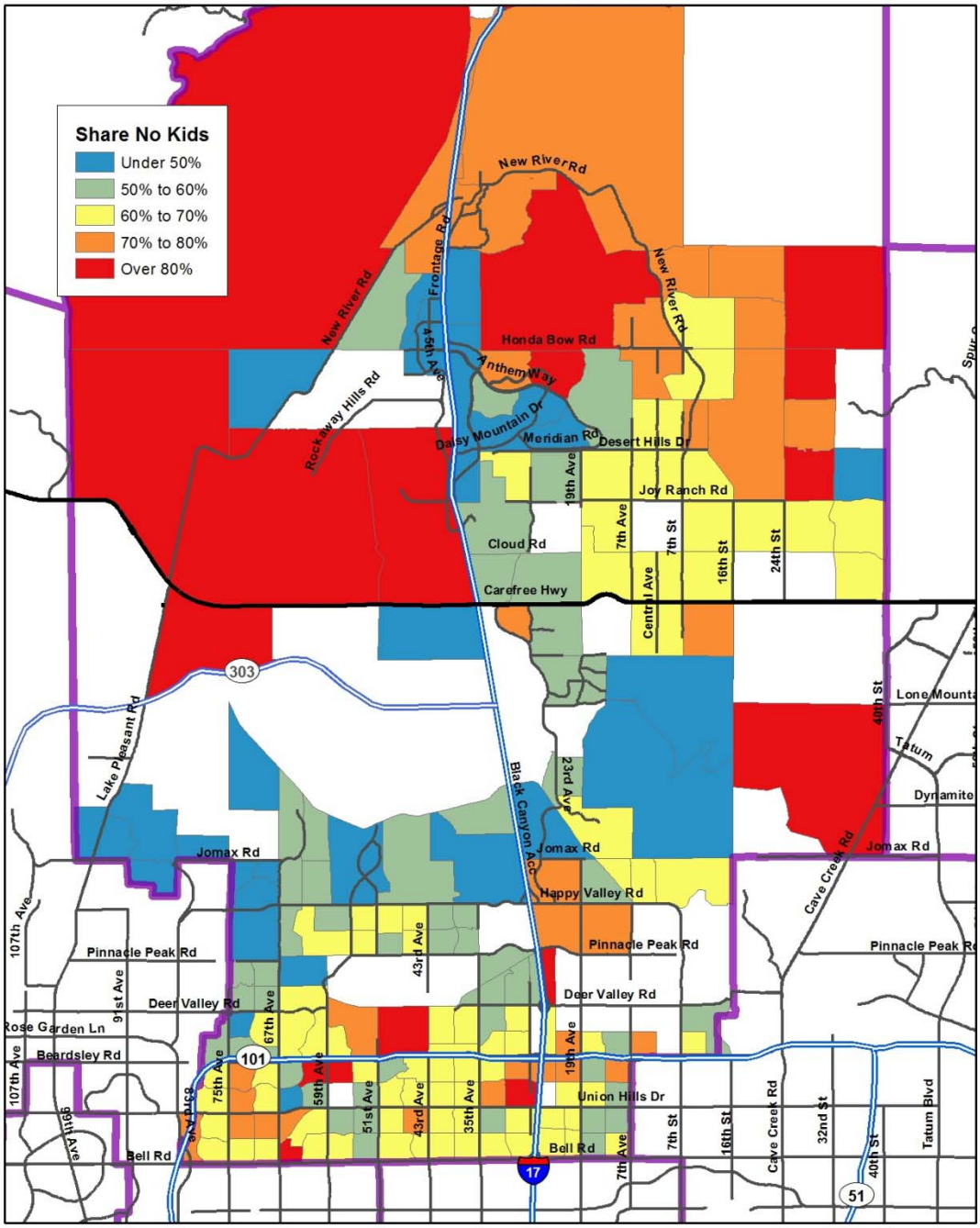
MAP 14
SHARE OF HOUSEHOLDERS AGED 45-54



Many other variables were examined to predict how the numbers of households in the two key parent age categories were likely to change over the next ten years. Four of the key variables are included as maps and may provide valuable information for general planning.

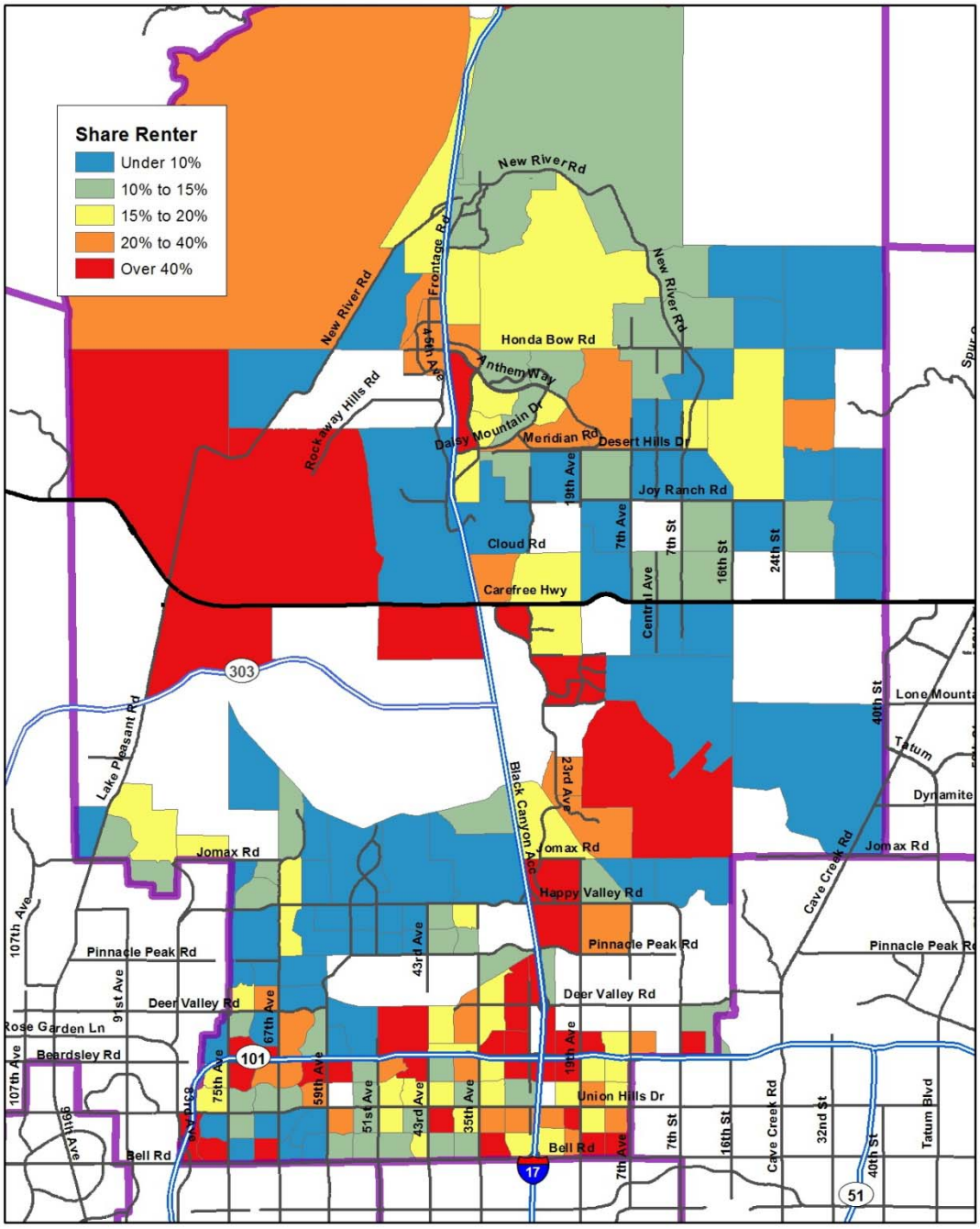
Map 15 shows the share of all households that do not have children under the age of 18. Overall, about 60 percent of the households in the District do not include children. High concentrations of childless households can be found in the northernmost part of the district, and scattered along the Loop 101 corridor. For the most part, the areas with childless households tend to have a lower population density.

MAP 15
HOUSEHOLDS WITHOUT CHILDREN UNDER 18



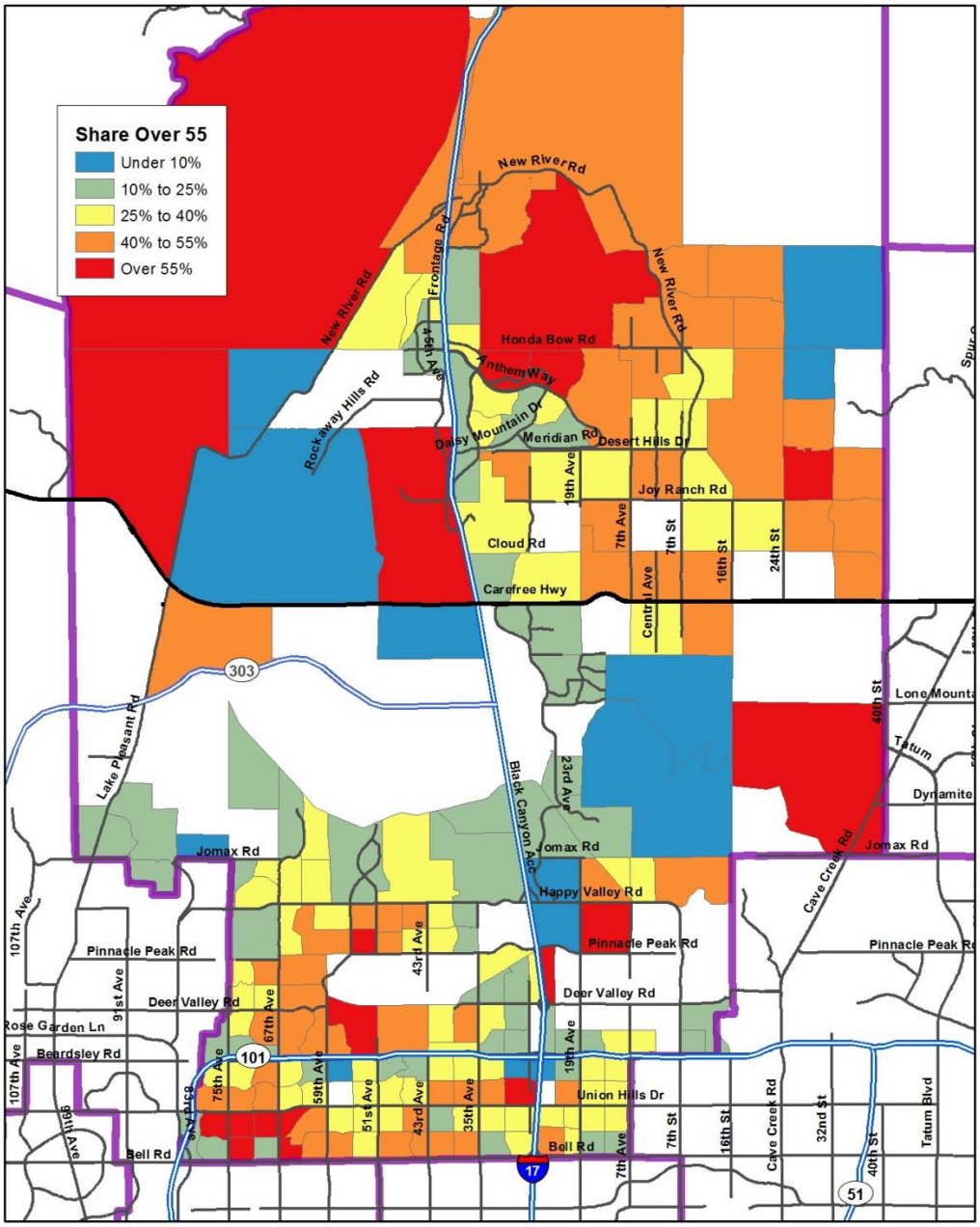
The share of housing units occupied by renters, shown on **Map 16**, is another factor found to be significant in determining the age distribution of householders. In general, rental households tend to have a younger age profile and, due to much higher mobility rates, these housing units tend to attract new householders of similar ages, rather than the same householders aging in place. Rental units are widely available in the District, with high concentrations near the intersection of Interstate 17 and Loop-101, continuing north along Interstate 17 up to Jomax, and in parts of Anthem. These areas also contain more multifamily housing.

MAP 16
SHARE OF RENTER-OCCUPIED HOUSING UNITS



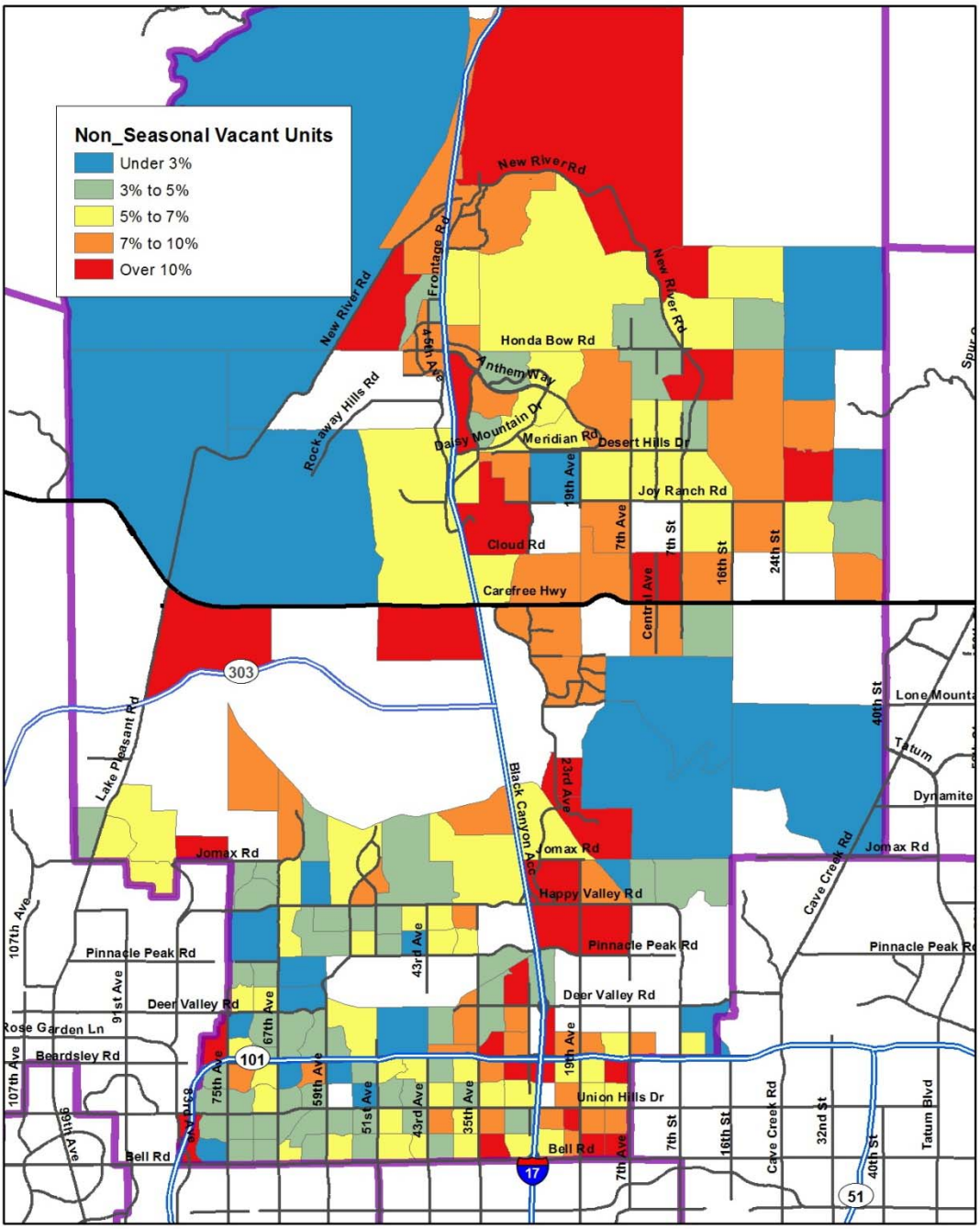
The third map shows the concentration of householders that are above the school-age generating age categories. **Map 17** shows concentrations of households headed by persons over 55. This older population is especially prevalent in the northern part of the District which also contains low density and higher cost housing. While there is a potential for future turnover of this housing to younger families, but the higher cost, and low turn-over rates of such housing are a limiting factor.

MAP 17
HOUSEHOLD HEADS OVER 55 YEARS



Finally, **Map 18** depicts housing vacancy rates throughout the district. Generally, vacancy rates are moderate to low, with the greatest concentrations of vacant units located in the Interstate 17 corridor and in pocketed areas in the northeast portion of the District.

MAP 18
NON-SEASONAL VACANT UNITS



It is important to note that these are not the only factors that affect generation rates. Factors such as density of residential development, housing type and housing prices were also used in projecting generation rates at the project level. These factors will contribute to attracting young families to different parts of the District, depending on the relative characteristics of the area and conditions in the metro area housing market.

5.2 School Enrollment by Attendance Area

Table 17 displays the projected enrollment by attendance area for 2014/15 through 2023/24 based on the current student data and the demographic trends portrayed in Section 5.1. This table is based solely on the attendance area designated for the student's place of residence. This provides a direct link to the demographic analysis and development projections, and is used to predict enrollment at each school in Section 5.4. It includes a designation for out-of-district students and excludes schools that do not have specific attendance areas.

The Norterra Canyon and Las Brisas Elementary attendance areas are projected to contain the largest number of students by 2023/24, with 1,371 and 969 students, respectively. Norterra Canyon is forecast to grow by about 4 to 7 percent per year, with a slight slowdown to 1 to 2 percent between 2018 and 2020. Las Brisas, with a current enrollment of about 1,060 students, is actually projected to lose about 90 students over the next 10 years, but will remain one of the larger attendance areas given high current enrollment.

Greenbrier, Highland Lakes and Desert Winds currently have the smallest attendance area populations among the elementary schools with less than 320 students each. Desert Winds is being repurposed next year, but the other two are projected to decline over the next decade to fewer than 290 each. Of the 28 remaining elementary school attendance areas in the District, 17 are projected to lose students by 2023/24.

At the middle school level, Deer Valley and Hillcrest are expected to remain the largest attendance areas by a wide margin. Deer Valley Middle School is projected to grow from a current attendance area enrollment of 830 students to over 1,000 students by 2020/21. The Hillcrest attendance area, which currently has 952 students, is projected to decline to about 850 students but remain the second largest in terms of attendance area enrollment. The only other regular middle school attendance area, Desert Sky, is projected have relatively stable attendance area enrollment throughout the projection period. Among the K-8 schools, large gains are expected in the 7th and 8th grades at Norterra Canyon attendance area adding about 300 students during the projection period.

Among the high schools, the Boulder Creek High School attendance area is currently the largest with 2,555 students and is projected to be the second largest by 2023/24, even with the loss of about 320 students. Sandra Day O'Connor is similar in size with 2,319 students, but is projected to fall to 2,181 students by 2023/24. Deer Valley, which currently has the smallest attendance area enrollment by a large margin, is projected to decline by about 280 Students. Barry Goldwater is the only attendance area that is expected to grow with nearly 1,400 additional students over the next 10 years. This gain slightly more than offsets losses at all the other high schools with the greatest losses projected at Mountain Ridge.

TABLE 17
STUDENTS BY ATTENDANCE AREA: 2008/09-2023/24

	Actual						Projected									
Attendance Area*	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Grades K-6																
Anthem Elem	569	532	475	457	418	403	387	380	388	399	411	407	402	400	393	385
Arrowhead	744	711	687	606	582	599	596	599	626	654	669	677	697	708	713	718
Bellair	501	439	388	384	385	411	418	404	420	425	422	417	422	419	413	407
Canyon Springs	1,011	1,017	951	930	911	824	812	796	779	778	763	752	757	746	731	716
Constitiution	676	598	599	611	566	591	798	815	852	877	903	913	902	901	891	878
Copper Creek	797	788	761	737	701	667	661	665	661	657	647	647	649	642	630	619
Desert Mountain	743	741	750	733	694	566	554	536	515	500	498	494	528	533	528	524
Desert Sage	775	704	646	611	589	514	503	469	452	437	442	451	439	433	424	415
Desert Winds	485	431	369	314	320	318	0	0	0	0	0	0	0	0	0	0
Diamond Canyon	902	851	782	740	707	638	613	600	587	561	559	554	551	541	528	515
Esperaza	582	530	516	514	495	413	573	576	629	659	702	712	748	775	800	826
Gavilan Peak	548	518	435	422	399	391	361	362	341	333	325	323	318	310	301	292
Greenbrier	394	416	399	368	353	300	286	293	278	277	268	285	286	288	287	288
Highland Lakes	326	322	300	268	236	230	231	223	223	230	220	222	226	226	223	221
Las Brisas	989	1,051	1,054	1,037	1,025	1,055	1,049	1,017	1,032	1,031	1,025	1,025	1,024	1,010	989	969
Legend Springs	493	488	454	407	385	384	400	408	418	411	416	430	437	441	443	445
Mirage	535	536	459	418	412	435	424	411	381	379	373	371	370	364	356	348
Mountain Shadows	636	585	528	517	481	468	459	471	498	511	530	517	516	513	503	494
New River	395	398	386	331	313	352	353	368	384	391	411	411	416	414	410	405
Norterra Canyon	580	640	699	721	702	808	897	979	1,064	1,122	1,161	1,193	1,231	1,283	1,322	1,371
Park Meadows	601	566	555	516	487	500	513	527	545	569	592	601	621	635	644	653
Paseo Hills	817	816	725	729	718	700	698	697	705	705	687	681	673	659	641	622
Sierra Verde	561	544	519	481	467	442	432	412	390	372	352	341	338	325	311	298
Stetson Hills	697	667	628	649	630	588	557	538	494	477	454	456	468	462	456	450
Sunrise	601	594	515	503	459	492	489	481	486	487	494	512	507	508	505	501
Sunset Ridge	837	907	941	984	931	821	821	806	783	783	768	788	792	790	782	775
Terramar	689	669	601	601	572	570	550	526	530	529	570	609	655	693	722	733
Village Meadows	618	552	512	496	467	438	450	456	459	484	486	465	491	494	492	492
Westwing School	853	902	884	805	809	783	772	796	819	799	790	792	796	794	788	787
Out Of District	557	580	625	711	744	777	797	832	845	869	885	897	901	905	900	894
Total	19,512	19,093	18,143	17,601	16,956	16,479	16,456	16,443	16,586	16,705	16,822	16,945	17,161	17,212	17,127	17,040

Source: Applied Economics, December 2013.

* Count based on the number of students by place of residence.

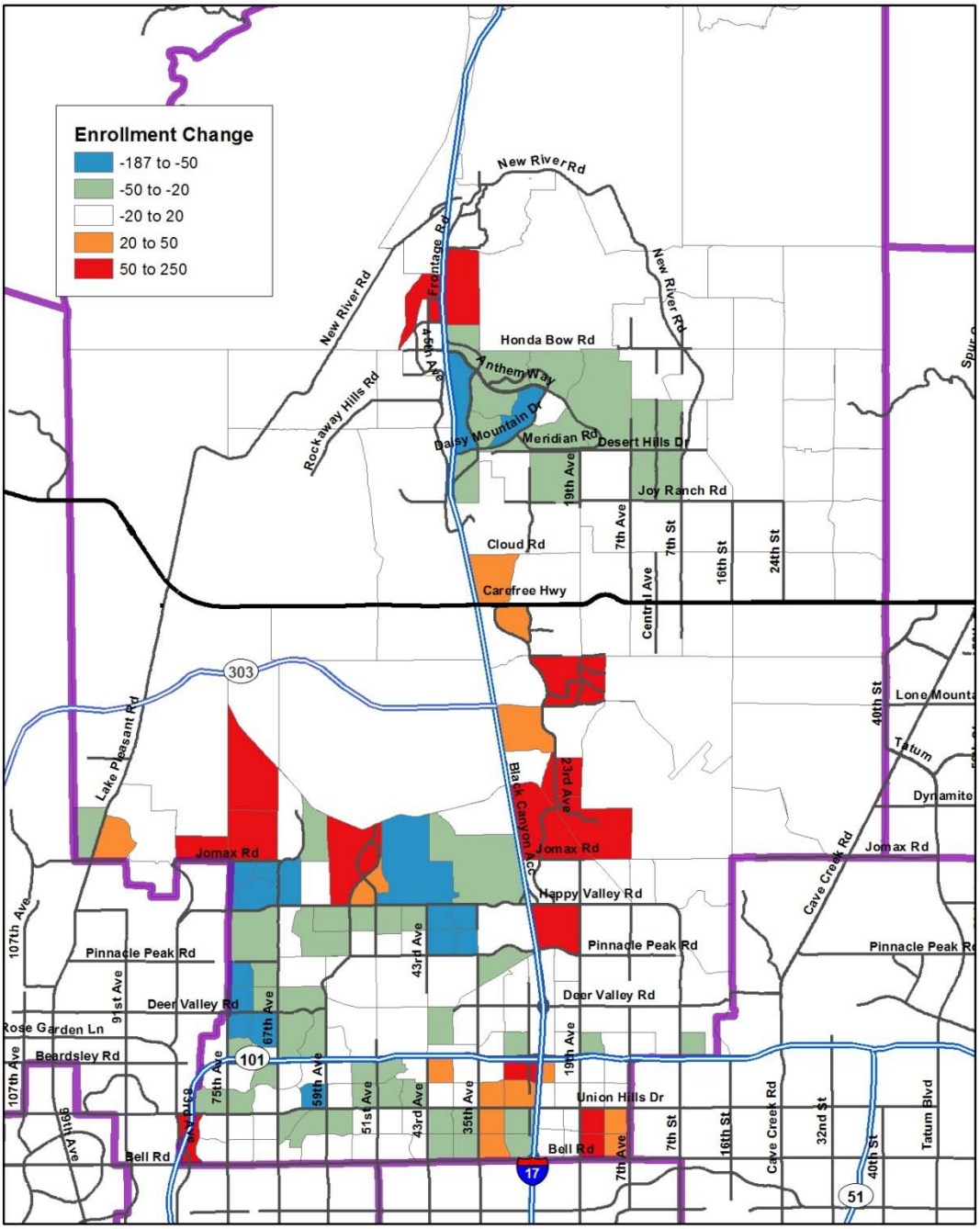
TABLE 17 (Continued)
STUDENTS BY ATTENDANCE AREA: 2008/09-2023/24

	Actual						Projected									
Attendance Area*	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Grades 7-8																
Anthem Elem	175	181	189	175	175	130	158	155	134	114	107	123	138	135	135	137
Canyon Springs	246	265	256	258	273	307	284	283	292	272	265	273	247	243	260	258
Deer Valley Middle	996	878	903	891	875	827	818	859	870	832	882	984	1,018	1,011	1,071	1,105
Desert Mountain	245	253	241	255	230	177	167	191	204	203	191	194	169	159	183	181
Desert Sky Middle	817	783	750	706	686	619	608	644	633	590	576	590	605	612	625	630
Diamond Canyon	239	249	228	210	205	190	200	224	213	224	208	182	180	183	188	186
Gavilan Peak	299	267	260	255	252	220	238	269	265	276	246	239	239	238	247	247
Highland Lakes	451	454	411	407	402	339	353	381	361	329	355	371	342	360	385	393
Hillcrest Middle	1,109	1,109	1,067	1,067	1,078	952	905	901	927	896	881	806	789	831	851	850
Norterra Canyon	124	139	187	193	193	179	198	223	265	294	335	368	405	433	451	478
Paseo Hills	114	108	93	109	104	99	93	94	93	91	97	109	101	90	99	97
Sierra Verde	193	186	198	184	179	175	158	139	149	143	137	127	106	104	111	107
Stetson Hills	247	248	237	238	236	211	214	210	225	222	198	177	138	145	162	158
Sunset Ridge	209	228	257	258	268	250	248	285	312	295	284	263	242	265	273	274
Terramar	257	238	237	224	231	250	264	251	254	253	249	240	256	275	294	301
Westwing School	211	224	237	229	232	233	259	253	219	241	247	211	198	207	220	220
Out Of District	88	121	156	192	209	225	243	234	253	266	262	277	290	299	305	311
Total	6,020	5,931	5,907	5,851	5,826	5,384	5,407	5,596	5,668	5,540	5,519	5,533	5,462	5,589	5,858	5,934
Grades 9-12																
Barry Goldwater	2,116	2,070	2,059	2,125	2,037	2,057	2,174	2,315	2,367	2,582	2,691	2,780	2,963	3,132	3,277	3,454
Boulder Creek	2,221	2,296	2,330	2,403	2,397	2,555	2,605	2,496	2,525	2,514	2,523	2,583	2,482	2,407	2,274	2,233
Deer Valley	1,924	1,850	1,764	1,729	1,710	1,683	1,633	1,572	1,488	1,488	1,467	1,447	1,436	1,392	1,380	1,400
Mountain Ridge	2,423	2,322	2,242	2,215	2,228	2,158	2,000	1,923	1,792	1,721	1,667	1,613	1,597	1,524	1,476	1,456
Sandra Day	2,017	2,094	2,194	2,214	2,203	2,319	2,275	2,278	2,300	2,315	2,379	2,406	2,382	2,291	2,217	2,181
Out Of District	275	299	310	340	408	418	397	425	456	463	502	508	524	551	560	581
Total	10,976	10,931	10,899	11,026	10,982	11,191	11,084	11,009	10,928	11,084	11,229	11,336	11,383	11,297	11,185	11,305

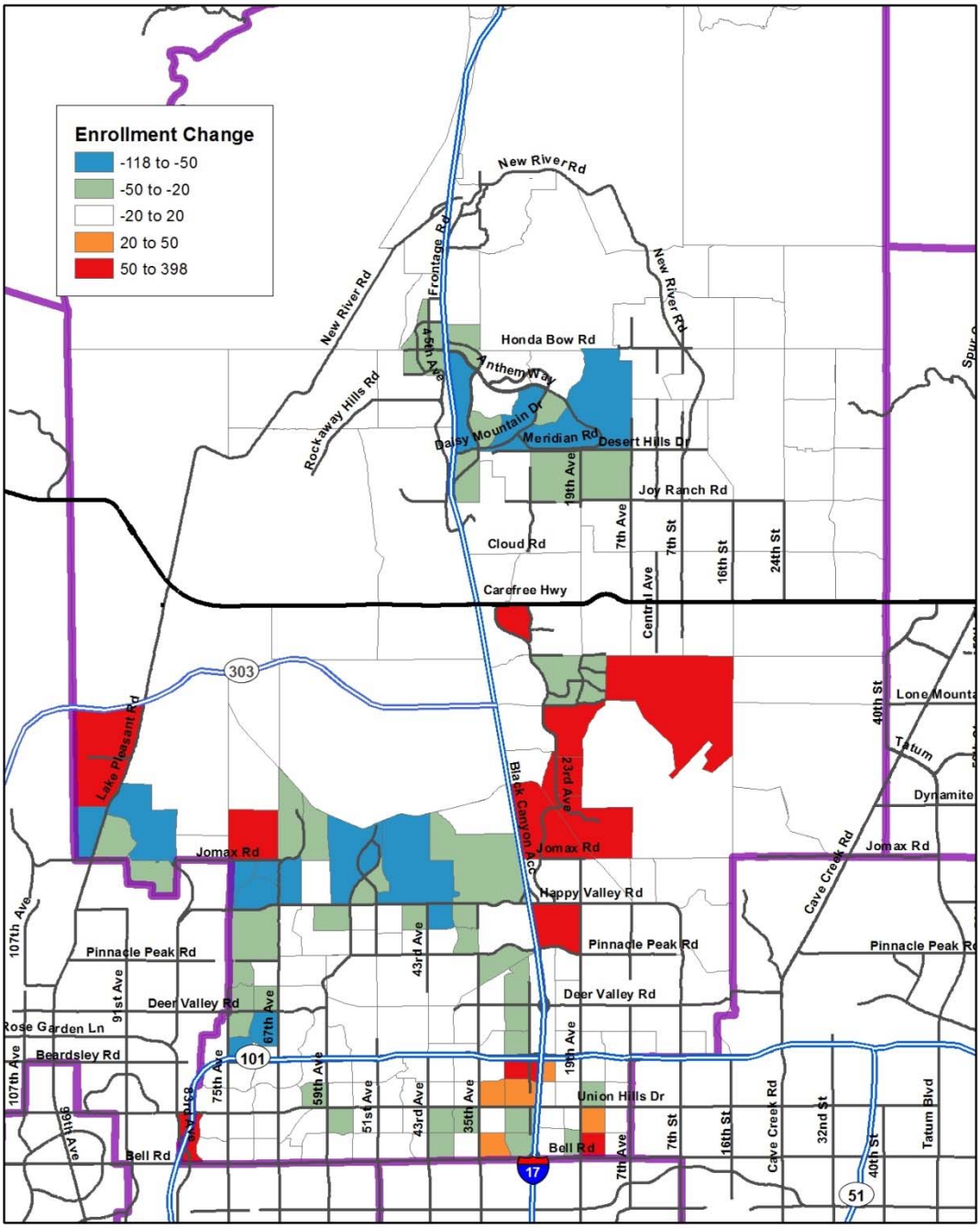
Source: Applied Economics, December 2013.

* Count based on the number of students by place of residence.

MAP 2
ENROLLMENT CHANGE: 2013/14 TO 2018/19



MAP 2
ENROLLMENT CHANGE: 2018/19 TO 2023/24



5.3 Enrollment Projections by School

In order to convert the projections of enrollment by attendance area (place of residence) into enrollment by school, it is necessary to quantify the relationship between the place of residence and school of attendance. This is accomplished by analyzing the relationship between the two factors based on current student information. **Table 18**, **Table 19**, and **Table 20** display the distributions of enrollment by school, versus enrollment by attendance area, for elementary, middle and high schools. These patterns at the school level provide an informative view of the flow of students between schools and from outside the District. It also provides insight into the success of each school in retaining students within their own attendance area, and attracting students from outside their attendance area.

In the tables below, the shaded numbers reflect students whose residence area and school of attendance are the same. The columns at the right break out the number of students from outside the District, total school enrollment, the number who reside within the District, and the difference between the number of students attending a school and residing within its attendance area. For example: at Arrowhead Elementary, there are 435 students enrolled who also live within the Arrowhead attendance area. There are 7 students at Arrowhead who reside in the Bellair attendance area, 3 from Copper Creek, etc. There are 38 students who attend Arrowhead from outside the District, resulting in total enrollment of 519 students. The Arrowhead attendance area contains a population of 600 students, though 3 attend Bellair, 14 are at Copper Creek, and so forth. Arrowhead has a net loss of 81 students, since the enrollment is 519, while there are 600 students residing in that attendance area.

Only about 77 percent of the elementary school students are attending their designated school, while about 80 percent of the 7th and 8th grade students attend their designated middle school, and nearly 83 percent of high school students attend the high school in their attendance area. The lower rate of attendance at designated schools at the elementary school level is likely due to the greater number of options at that level and the relatively smaller distance between neighboring elementary schools.

The net difference between each school's enrollment and the number of students that reside within the attendance area provides an estimate of in- and out-migration impacts on enrollment. Among elementary schools, Highland Lakes has the largest net gain in enrollment from outside its attendance area with 377 added K though 6 students including 62 students from outside the District. Sierra Verde and Legend Springs also each have net gains of 200 to 250 students, including a sizeable number of students from outside the District. The only two elementary schools with significant net losses in enrollment include Canyon Springs and Las Brisas, each with 200 or more students attending other District schools.

Among schools with 7th and 8th grades, Highland Lakes and Paseo Hills have the highest enrollment net gains from other District schools while Deer Valley and Canyon Springs have the highest net losses, with out-migration of over 100 students each.

Three of the high schools—Barry Goldwater, Mountain Ridge, and Sandra Day—have net enrollment gains of between 100 to 220 students each. Only Deer Valley has significant out-migration, despite having the largest number of attendees from outside the District.

TABLE 18
SCHOOL VERSUS ATTENDANCE AREA ENROLLMENT (K-6th GRADE): 2013/14

School	Code	Attendance Area																														Total Attend	Total Reside	Diff.
		AEE	ANE	BEE	CCE	COE	CSE	DCS	DME	DSE	DWE	ESE	GBE	GPE	HLE	LBE	LEG	MEE	MSE	NOR	NRE	PHE	PME	SEE	SRE	STE	SVE	TER	VME	WWE	Outside			
Arrowhead	AEE	435		7	3	1				2			13		2	1	3	2	4			1		1			2	2		2	38	519	600	-81
Anthem Elem	ANE		305				151	27	3					25						1	23	2			9						7	553	404	149
Bellair	BEE	3		285	1	1	1				2	3	18		1	3		19	8		1	4	3	7	2	2	2	1	2	1	76	446	412	34
Copper Creek	CCE	14		2	560					5		1	3		3	20	4	3	3	2			7	1		1	13	31		11	43	727	669	58
Constitiution	COE					524					8								1			1		3	1				5		11	554	592	-38
Canyon Springs	CSE		10				500	2	3	1		1		3		1		1	1	1	9				6						4	543	826	-283
Diamond Canyon	DCS		25				60	545	9			1		68							10				5						6	729	640	89
Desert Mountain	DME						3	2	466			2								1	12	1			25				1		4	517	567	-50
Desert Sage	DSE		1		3		1		5	409	1	9				26			1	7		4	7		1	4		3	6		16	504	515	-11
Desert Winds	DWE					23			1		284	12										5	3	2				1	8		23	362	319	43
Esperaza	ESE					1					1	324				1				1		1							3		11	343	414	-71
Greenbrier	GBE	1		48		1							185				4	9	10			1	1	3			1		1		58	323	301	22
Gavilan Peak	GPE		49				86	52	14	1	1			286					2		28				22				1		4	546	392	154
Highland Lakes	HLE	74	10	21	12	7	2	5	2	10	2	5	48	4	203	26	8	4	23	11	2	1	7	4	18	8		16	5	8	62	608	231	377
Las Brisas	LBE	1		1	8				1	4		2			2	759	1		3	3		3				1	3	9		6	14	821	1,058	-237
Legend Springs	LEG	14		5	11		1		1	9	1		10		6	47	340	6	10	1		5	7			3	20	41		6	60	604	385	219
Mirage	MEE			3	1	2				1	1	1	1					371	8	1			7	6				3	3		31	440	436	4
Mountain Shadows	MSE	1		14		1				2		1	3			1	1	7	373	3		11	8	1					2	1	30	460	469	-9
Norterra Canyon	NOR			1					8	5	3	13				3			2	765		6			52	8				1	11	878	808	70
New River	NRE		1				5	2	1												258	1			1						7	276	353	-77
Paseo Hills	PHE	1		6		1			2	6	5	14				2		1	1	1	1	631	20	3	2	2			10		17	726	703	23
Park Meadows	PME	1		2		2				4	2	3				1		4	3	2		15	411	13	1	4			9		28	505	502	3
Sunrise	SEE			1		1					1	3				1		4	3			6	4	440					3		26	493	493	0
Sunset Ridge	SRE		3	1			13	3	48					1			1			2	7	1			670			1	3		2	756	822	-66
Stetson Hills	STE	2			14				3	47		9	2	3		114			2	5			6	1		542		12		1	7	770	590	180
Sierra Verde	SVE	49		11	20			1		4		2	15	1	12	22	22	3	7				6		1	3	398	18	1	9	90	695	443	252
Terramar	TER	4		3	17		1			4	1	4		1	1	21	1		1				2	3	2	8	4	425		48	29	580	571	9
Village Meadows	VME					23					2	4						1				1		5					375		19	430	438	-8
Westwing School	WWE				18		1						1		1	9							1		2	3		7		690	45	778	786	-8
Other		0	0	1	1	4	1	1	0	1	4	0	2	0	0	0	0	1	3	1	2	2	2	0	2	1	0	1	0	2	0	32	32	0
Total Reside		600	404	412	669	592	826	640	567	515	319	414	301	392	231	1,058	385	436	469	808	353	703	502	493	822	590	443	571	438	786	779	16,518	15,771	747
																													Attend = Reside:			12,759	77.2%	

Sources: Deer Valley Unified School District; Applied Economics, 2013.

TABLE 19
SCHOOL VERSUS ATTENDANCE AREA ENROLLMENT (7TH-8th GRADE): 2013/14

School Name	Code	Attendance Area																Total Attend	Total Reside	Diff.
		ANE	CSE	DCS	DME	DSM	DVM	GPE	HCM	HLE	NOR	PHE	SRE	STE	SVE	TER	WWE	Outside			
Anthem Elem	ANE	107	63	3	1			15			1		1					1	192	130	62
Canyon Springs	CSE	3	187	1	1		1	7					1						201	308	-107
Diamond Canyon	DCS	6	14	167	1			25					2						215	191	24
Desert Mountain	DME		4		164			5					10					1	184	178	6
Desert Sky Middle	DSM	1				540	19		4	4			1		2		1	57	629	621	8
Deer Valley Middle	DVM					6	638		2			7					1	11	665	830	-165
Gavilan Peak	GPE	9	24	11	1			164					2					1	212	221	-9
Hillcrest Middle	HCM					11	11		833	18	1	2	2	7	13	55	6	49	1,008	955	53
Highland Lakes	HLE	1	5	2	3	49	10	3	25	286	7		4	1	1	3	2	40	442	340	102
Norterra Canyon	NOR				1		12		3		169	1	8					2	196	180	16
Paseo Hills	PHE	1				3	123	1	8			88	1	2				5	232	99	133
Sunset Ridge	SRE	2	10	2	6	1	1	1					217					3	243	251	-8
Stetson Hills	STE					3	2		37	1	2		1	196		8		6	256	212	44
Sierra Verde	SVE			1		3	3		22	29				1	159	3	2	27	250	176	74
Terramar	TER			1		1	2		10					3	1	174	4	7	203	251	-48
Westwing School	WWE			1		1			10					1		8	217	16	254	234	20
Other		0	1	2	0	3	8	0	1	2	0	1	1	1	0	0	1	0	21	21	0
Total Reside:		130	308	191	178	621	830	221	955	340	180	99	251	212	176	251	234	226	5,403	5,198	205
																	Attend = Reside:		4,306	79.7%	

Sources: Deer Valley Unified School District; Applied Economics, 2013.

TABLE 20
SCHOOL VERSUS ATTENDANCE AREA ENROLLMENT (9TH-12th GRADE): 2013/14

School	Code	Attendance Area						Total Attend	Total Reside	Diff.
		BCH	BGH	DVH	MRH	SDH	Outside			
Boulder Creek	BCH	2,433	79			2	58	2,572	2,583	-11
Barry Goldwater	BGH	70	1,651	42	20	38	56	1,877	2,070	-193
Deer Valley	DVH	6	77	1,552	85	20	139	1,879	1,712	167
Mountain Ridge	MRH	5	26	70	1,961	116	111	2,289	2,183	106
Sandra Day	SDH	41	207	15	95	2,153	58	2,569	2,345	224
Other		28	30	33	22	16	1	130	129	1
Total Reside		2,583	2,070	1,712	2,183	2,345	423	11,316	11,022	294
						Attend = Reside:		9,750	86.2%	

Sources: Deer Valley Unified School District; Applied Economics, 2013.

Tables 21 and 22 show projected enrollment by school for 2014/15 through 2023/24, based on applying the live/attend relationships above to the projected level of enrollment by resident attendance area. The largest elementary schools currently include Highland Lakes, Norterra Canyon, Stetson Hills and Westwing, each with over 1,000 students. Norterra Canyon is projected to grow significantly, reaching nearly 2,000 students by 2023/24. While Highland Lakes and Stetson Hills will remain among the larger schools, they are each projected to lose students over the ten year period. Terramar which currently has about 800 students is projected to grow by nearly 400, becoming the second largest elementary school by 2023/24. Esperaza and Park Meadows are also projected to show above average growth over the next 10 years while Canyon Springs, Diamond Canyon, Highland Lakes, Las Brisas, Paseo Hills, and Sierra Verde are all expected to lose over 100 students over the projection period.

Among the middle schools, Hillcrest currently has significant larger enrollment than the other schools at 1,008. It is expected to continue to be the largest of the middle schools through 2023/24, despite declining by 33 students. Deer Valley is projected to grow by nearly 300 students or 45 percent, largely in the later part of the projection period. Desert Sky is expected to remain relatively steady, with a projected net increase of about 14 students.

At the high school level, Boulder Creek and Sandra Day O'Conner currently have the highest enrollment with nearly 2,600 students each. Both of these schools are expected to show declines enrollment over the next ten years of 9 to 11 percent. With a net gain of nearly 1,500 students, equivalent to 79 percent growth over 10 years, Barry Goldwater is projected to be the largest high school by 2023/24. Deer Valley is projected to lose about 275 students (14 percent) while Mountain Ridge is projected to lose nearly 600 students (26 percent), bringing total enrollment to about 1,700 by the end of the projection period.

TABLE 21
ELEMENTARY SCHOOL ENROLLMENT: 2008/09-2023/24

	Actual						Projected									
School	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Elementary																
Anthem Elem	895	862	859	855	844	768	766	749	732	718	727	731	743	735	729	723
Arrowhead	792	768	732	638	577	539	556	577	604	634	642	651	672	684	689	693
Bellair	585	531	484	473	471	460	462	441	448	455	451	446	451	447	439	435
Canyon Springs	1,014	1,048	918	837	805	760	744	745	740	731	711	707	697	675	677	662
Constitiution	672	579	567	578	543	578	795	812	850	869	893	900	888	888	877	867
Copper Creek	688	866	847	820	787	748	750	747	753	751	752	760	761	753	741	730
Desert Mountain	1,001	999	969	933	812	739	721	723	725	714	709	722	743	750	770	765
Desert Sage	812	747	668	645	600	553	542	519	509	501	508	521	508	503	491	479
Desert Winds	545	484	429	398	432	377	0	0	0	0	0	0	0	0	0	0
Diamond Canyon	1,160	1,116	1,009	993	1,024	959	948	958	928	911	892	864	863	850	844	831
Esperanza	565	557	532	529	399	360	534	538	588	619	671	679	714	739	764	791
Gavilan Peak	968	945	854	853	805	779	793	862	868	881	825	819	805	803	800	790
Greenbrier	508	552	525	476	383	337	354	374	378	391	394	413	415	416	417	417
Highland Lakes	904	883	838	857	1,080	1,068	1,069	1,070	990	926	927	936	899	910	932	937
Las Brisas	927	936	894	843	814	820	809	778	779	778	771	767	765	752	731	709
Legend Springs	667	700	692	648	626	603	606	609	595	574	569	557	565	571	575	576
Mirage	602	592	507	453	448	438	421	404	372	375	374	370	370	365	356	347
Mountain Shadows	641	592	534	500	463	472	465	480	498	502	521	518	517	514	503	492
New River	338	340	312	256	267	274	274	283	298	300	321	321	325	323	318	313
Norterra Canyon	650	865	1,013	1,079	1,051	1,074	1,183	1,300	1,437	1,527	1,607	1,672	1,749	1,840	1,896	1,972
Park Meadows	646	613	579	566	542	547	574	596	625	656	684	711	730	746	757	768
Paseo Hills	1,092	1,083	983	991	961	959	885	814	813	798	782	777	750	719	709	691
Sierra Verde	796	772	786	799	881	967	935	896	887	865	834	803	786	759	752	735
Stetson Hills	1,003	980	1,018	1,092	1,055	1,025	1,021	1,010	1,003	995	967	967	948	967	978	970
Sunrise	599	575	499	479	492	493	486	478	480	482	484	502	496	496	494	490
Sunset Ridge	1,118	1,128	1,185	1,215	1,057	998	988	999	1,000	981	953	943	918	924	924	918
Terramar	1,067	866	790	810	800	816	841	855	879	897	949	1,005	1,073	1,146	1,195	1,211
Village Meadows	605	566	506	497	488	430	431	430	429	451	453	431	458	460	457	456
Westwing School	1,058	1,091	1,112	1,011	1,075	1,031	1,046	1,058	1,065	1,076	1,074	1,051	1,044	1,049	1,055	1,052
Total	22,918	22,636	21,641	21,124	20,582	19,972	19,998	20,105	20,275	20,362	20,447	20,544	20,653	20,783	20,869	20,818

Source: Applied Economics, December 2013.

TABLE 22
MIDDLE AND HIGH SCHOOL ENROLLMENT: 2008/09-2023/24

	Actual						Projected									
School	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Middle School																
Deer Valley Middle	846	714	757	753	686	666	659	699	717	684	732	835	871	867	929	964
Desert Sky Middle	851	837	768	741	690	629	608	642	636	597	582	597	614	622	637	643
Hillcrest Middle	1,139	1,130	1,140	1,143	1,039	1,008	1,011	1,005	1,040	1,018	999	924	909	953	974	975
Total	2,836	2,681	2,665	2,637	2,415	2,303	2,278	2,346	2,393	2,299	2,313	2,356	2,394	2,442	2,540	2,582
Grades 9-12																
Barry Goldwater	2,028	1,964	1,878	1,884	1,938	1,880	2,011	2,187	2,281	2,496	2,605	2,694	2,877	3,046	3,190	3,366
Boulder Creek	2,251	2,357	2,375	2,400	2,458	2,575	2,637	2,556	2,606	2,597	2,618	2,680	2,584	2,517	2,386	2,350
Deer Valley	2,031	2,000	1,955	1,863	1,915	1,876	1,793	1,755	1,667	1,670	1,656	1,637	1,628	1,590	1,581	1,604
Mountain Ridge	2,484	2,412	2,355	2,314	2,255	2,291	2,153	2,104	2,006	1,937	1,892	1,839	1,828	1,760	1,715	1,699
Sandra Day	2,121	2,247	2,413	2,521	2,603	2,569	2,490	2,407	2,367	2,384	2,458	2,486	2,466	2,384	2,313	2,286
Total	10,915	10,980	10,976	10,982	11,169	11,191	11,084	11,009	10,927	11,084	11,229	11,336	11,383	11,297	11,185	11,305

Source: Applied Economics, December 2013.