

# **Thoughts on Using Multi-Year ACS Estimates for San Francisco and Tulare Counties, California**

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## **Background**

The U.S. Census Bureau produced a series of multi-year estimates for evaluation for thirty-four comparison counties in the American Community Survey (ACS) where survey data have been collected since 1999. The demographic, social, economic, and housing data tables for the population residing in households include six years of single year estimates for 2000 through 2005 for geographic areas with populations of 65,000 or more, five years of 3-year estimates for 1999-2001 through 2003-2005 for geographic areas with 20,000 or more population, and three years of 5-year estimates for 1999-2003 through 2001-2005 for geographic areas under 20,000 population that also include census tract data.

Annual estimates from the ACS have been published for areas with 250,000 or more population since 2003. Annual estimates for areas with 65,000 or greater population were first published in the summer of 2006 and the second set of annual estimates that includes the group quarters population data were published in 2007. Data for areas with populations from 20,000 to 65,000 will receive 3-year estimates, based on the monthly data collected during 2005 through 2007, in the summer of 2008. Data for communities with populations of 20,000 or fewer, as well as data for census tracts, will be pooled during the 2005 through 2009 period with the 5-year estimates scheduled for release in 2010. The multi-year study data from the ACS comparison counties provide an early opportunity to discover more about the nature of the various multi-year estimates, including the 5-year averages and census tract data that will not be available for all areas until 2010.

The goals of the Census Bureau's multi-year evaluation program are to address issues of data quality for small areas, stability and interpretation of multi-year estimates, methodological issues in producing the estimates, methods for comparing multi-year estimates, and the display and release of the data series. Discoveries made in analysis of the multi-year data can inform and improve the forthcoming ACS products. This research will focus on the usefulness and accuracy of ACS data for the San Francisco and Tulare County ACS test sites in California. It will consider issues that will arise in assisting data users with identification and interpretation of ACS estimates including stability, recommended uses of the various estimates series, and comparison of ACS estimates with administrative data sources.

The fourteen separate data series available for this study multiplied by the number of geographies included multiplied by the wealth of demographic, social, economic, and housing variables multiplied by the various quality measures represent a colossal data base. And so it will be for all future ACS data users. The initial approach was to select a very restricted set of geographies and variables and to assess these various data series with reference to the margins of error, the quality measures, and some available administrative records.

The amount of data collected and planned for annual dissemination is massive. There will be multiple annual or multi-year estimates for a specific variable that was collected in a given year for a single geographic area. For example, data collected in a single calendar year such as 2003 will be components of seven of the fourteen separate currently published estimates. In the future, those data will also be represented in two additional data series when 2002-2006 and 2003-2007 5-year estimates are released. Only the annual 1-year estimates series represents independent estimates. The overlapping data in the multi-year estimates moderates the annual changes in the ACS point estimates. While increasing the stability of the estimates, changes in the averaged data may or may not represent real change from year to year.

Data Included in Multi-Year Estimates							
ACS 1-, 3- or 5-Year Estimate	ACS Data Collection Year						
	2005	2004	2003	2002	2001	2000	1999
2005	X						
2004		X					
2003			X				
2002				X			
2001					X		
2000						X	
2003-2005	X	X	X				
2002-2004		X	X	X			
2001-2003			X	X	X		
2000-2002				X	X	X	
1999-2001					X	X	X
2001-2005	X	X	X	X	X		
2000-2004		X	X	X	X	X	
1999-2003			X	X	X	X	X

More geographic areas become available when more years are pooled to produce the ACS estimates. County, county subdivision, place, and school district geographies are supported in the 1-year estimates. These geographies as well as Public Use Microdata Areas (PUMAs) are included for 3-year estimates. Areas such as county, county subdivision, census tract, block group, place, Native Home Land, Public Use Microdata Area (PUMA), zip code, and school district may be available for the 5-year estimates.

Comparison of Geographic Areas Available in Multi-Year Estimates						
Available Geographic Areas	San Francisco County			Tulare County		
	5-Year	3-Year	1-Year	5-Year	3-Year	1-Year
County	X	X	X	X	X	X
County Subdivision (MCD)	X	X		X	X	
Census Tract	X			X		
Block Group	X			X		
Place pt.*	X	X	X	X	X	X
AIAN, Hawaiian Home Land				X		
PUMA (5%)	X	X	X	X	X	X
Zip Code	X			X		
School District (Elementary)				X	X	
School District (Secondary)				X	X	X
School District (Unified)	X	X	X	X	X	X

\*Places available vary by 5-, 3-, and 1-year estimates based on population size.

As with the decennial census long-form before it, what we know about the ACS data and data quality may be largely what is revealed by the survey itself. Few administrative data sources are available to compare with the census or ACS estimates especially for small geographic areas and, except for variables like population and housing that are used as survey controls, future decennial censuses will not provide new benchmarks for the “long-form” characteristics data now collected by the ACS.

## **ACS, Administrative Data, and Population Controls**

### **ACS and Population Controls**

There are two ACS comparison counties in California: San Francisco and Tulare. San Francisco, with a household population exceeding 700,000 since 2000, has coterminous city and county boundaries; therefore for that county there is but one city and it has 1-, 3- and 5-year estimates. Tulare County's household population exceeded 350,000 since 2000. The county along with Visalia, its largest city, with a population over 100,000 qualifies for 1-year estimates as well as the 3- and 5-year estimates. The cities of Porterville and Tulare, with populations between 40,000 and 50,000 each have 3- and 5-year estimates. Five cities with populations below 20,000 have 5-year estimates: Dinuba, Exeter, Farmersville, Lindsay, and Woodlake.

The U.S. Census Bureau and the California Department of Finance's Demographic Research Unit each produce independent state and county estimates for California. The U.S. Census Bureau's intercensal population and housing estimates serve as population controls for the American Community Survey. The Bureau's most current population estimates for states are for July 1, 2007. The State's independent estimate is 37,771,431. The Census Bureau's estimate for California is 36,818,575. This is a difference of over 1.2 million persons, close to 3 percent lower, than the official estimates produced by the State of California demographers.

The Bureau's most current county-level estimates are vintage July 1, 2006. At that point, the discrepancy in two agencies estimates for San Francisco County was about 60,000, nearly 8 percent. In Tulare, the differences are more modest, around 6,000 persons, less than 1.5 percent. The ACS data in the multi-year study are for the household population. In Tulare county, the group quarters population estimate, of less than 6,000 persons, that is used by the Census Bureau is provided by the State of California. The group quarters population does not account for the differences in the agencies estimates. The primary discussion of the ACS data in this paper will be centered in Tulare County to reduce questions of the effect of population controls on the ACS data.

### **Administrative Data**

Some of the administrative data sets that are readily available for comparison with the ACS estimates include births from the California Department of Health Services, civilian labor force from the California Employment Development Department, number of registered vehicles from the California Department of Motor Vehicles, number of persons granted legal permanent resident immigrant status from the Department of Homeland Security, and public school enrollment from the California Department of Education.

Births, civilian labor force, elementary school enrollments, and number of registered vehicles data are available at the county level and were compared with ACS annual estimates for Tulare County at the 2006 Joint Statistical Meetings. In general, the ACS estimates were less linear than the administrative records but the administrative counts of births and elementary enrollment generally fell within the upper and lower bounds of the 2000 through 2004 ACS estimates. The ACS civilian labor force estimates reported by the California Employment Development Department were somewhat higher than the ACS upper bound estimates but the trends followed a similar pattern. The State data, reported monthly, showed substantial increases in the Tulare County civilian labor force during April through July when many migrants, documented and undocumented, contribute to the crop harvesting activities. It was not possible to assess the success of the ACS in surveying these populations or view monthly ACS data for this variable. It should be noted that some portion of these seasonal agricultural workers are housed in group quarters housing. The number of registered vehicles reported by the California Department of Motor Vehicles as likewise higher than the ACS upper bound of the estimate of number of vehicles available. This is at least partially, if not wholly, due to the conservative assumption that only 3 vehicles was the number represented by households

selecting the “3 or more vehicles available” response category. Again, the trends from 2000 through 2004 were similar for both data series. This study will explore ACS high school enrollment estimates, reported enrollments, and related ACS quality measures; a comparison of the number of persons granted legal permanent resident immigrant status by the Department of Homeland Security with the ACS estimates of those who resided abroad one year ago; and ACS vacancy rates.

## High School Enrollment Comparisons

### Tulare Joint Union High School District

For this initial analysis, ACS high school enrollment estimates for the Tulare Joint Union High School District and the Visalia Unified School District in Tulare County are examined in relationship to official enrollment reported by those districts to the State of California’s Department of Education to address two goals of the multi-year estimates research: issues of data quality for small areas and the stability and interpretation of multi-year estimates. There are over 1,000 public school districts in California enrolling over six million students. This paper looks at only two of the school districts and is restricted to high school enrollments.

The table below displays the ACS estimates from the 14 separate 1-, 3-, and 5-year series, along with their upper and lower bounds calculated from the margins of error provided with the estimates, and the official enrollment reports of the school district. In order to display these data it was necessary to separately access or calculate each value: 6 for the State Department of Education and 42 for the American Community Survey. There is a massive quantity of data and on-going discussions with data users will be critical to the future access and ultimate availability and usefulness of the ACS data. In addition to these data for the school district the ACS estimates and margins of error are also available for each district’s twenty or so census tracts in the three separate 5-year estimates series.

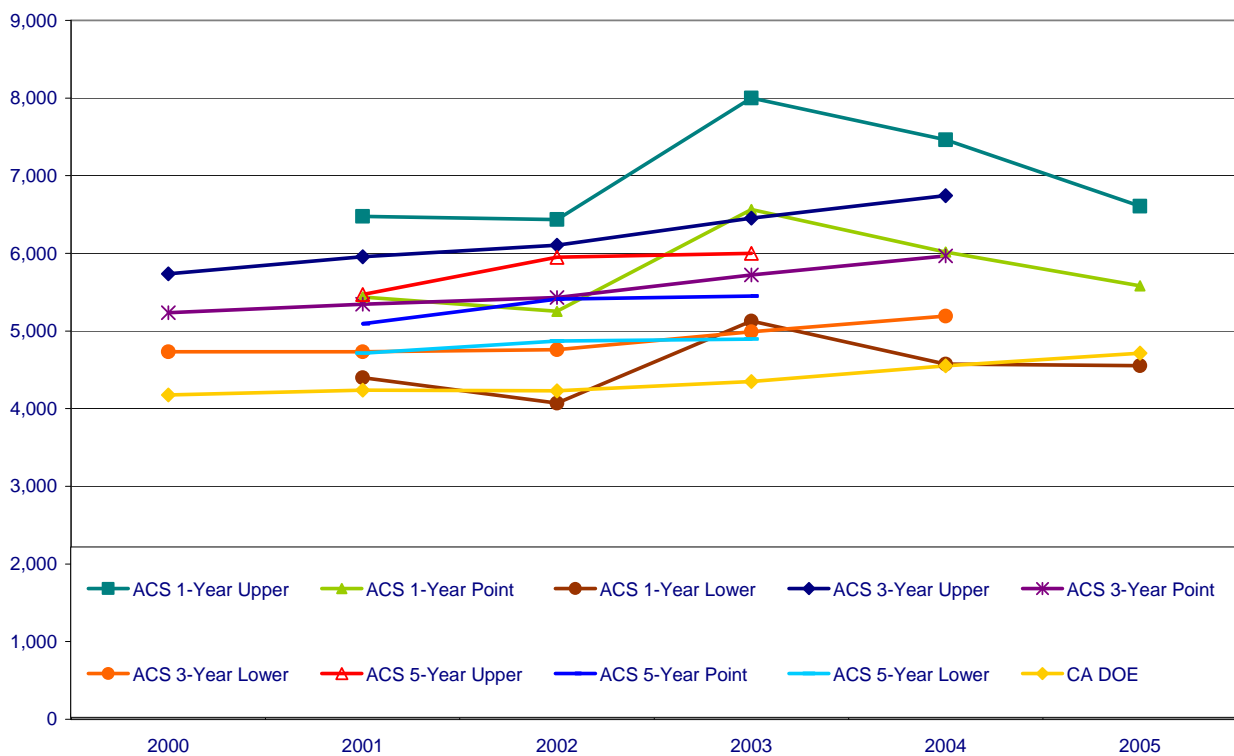
<b>Tulare Joint Union High School District Enrollment</b>							
		<b>Estimate Period</b>					
		<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
		<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
			<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Estimate Series</b>							
ACS 1-Year Upper		n/a	6,478	6,436	8,001	7,462	6,609
ACS 1-Year Point		n/a	5,438	5,253	6,565	6,019	5,582
ACS 1-Year Lower		n/a	4,398	4,070	5,129	4,576	4,555
ACS 3-Year Upper		5,736	5,956	6,106	6,453	6,744	
ACS 3-Year Point		5,235	5,345	5,432	5,721	5,968	
ACS 3-Year Lower		4,734	4,734	4,758	4,989	5,192	
ACS 5-Year Upper			5,470	5,951	6,001		
ACS 5-Year Point			5,093	5,411	5,449		
ACS 5-Year Lower			4,716	4,871	4,897		
CA DOE		4,176	4,239	4,230	4,350	4,551	4,714

The population universe for the ACS enrollment question is the population 3 years and over. The question asks “At any time IN THE LAST 3 MONTHS, has this person attended regular school or college? Include only nursery or preschool, kindergarten, elementary school, and schooling which leads to a high school diploma or a college degree”. The next question asks “What grade or level was this person attending?” and there is a check box for “Grade 9 to grade 12”. There may be some adults living in the school district who are enrolled in some high school classes or adult education classes at the high school. Although data for 2000 were not available for this district, the 3- and 5-year averages are produced for the time periods that would include the 2000 data. The California Department of Education (CA DOE) data is a census or snapshot of enrollment reported by the school district to the California Department of

Education as of October of each year. The data are for public school enrollment only, however, the addition of private school enrollment would not raise the official enrollment statistics much. The total private school enrollment in the high school grades for the entire county is around 400 per year. It is possible there is a modest amount of home schooling in the high school grades. The ACS estimates are generally higher than the enrollment reported by the state. Again, the California number captures most of the enrollment but is restricted to reported public school enrollment and would be expected to be somewhat lower than the ACS estimate. It is also a single measure of enrollment in October and would not capture any enrollment increase throughout the year or during the crop harvesting season that begins in April; however the ACS monthly sample could.

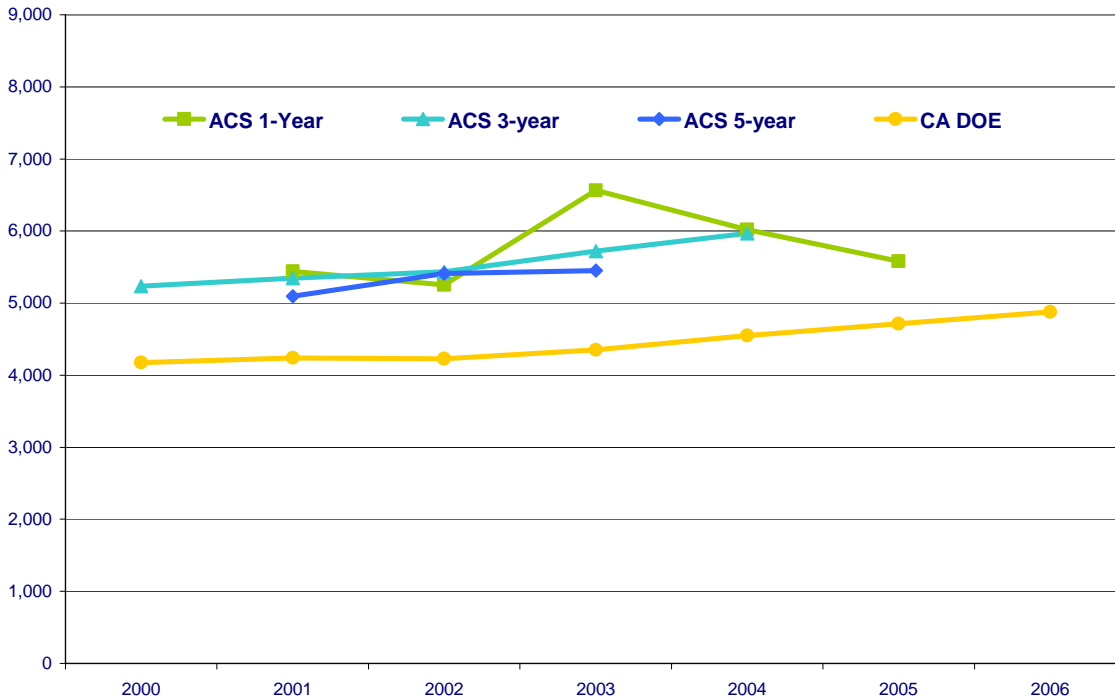
This graph displays the enrollment estimates currently available for the Tulare Joint Unified High School District.

**A Wealth of Tulare Joint Unified High School District Enrollment Estimates**



Except for 2003 when there was a noticeable spike in the ACS 1-year estimate, the California enrollment data was within the bounds of the ACS estimate towards the lower end. Adding regression trend lines to the ACS 1-year estimates and the California enrollments reveals that the overall trends are similar and those of the ACS lower bound estimates and the reported enrollment are very close. If the trend lines were not employed, the 1-year ACS estimates appear unstable and do not appear to be capturing the steady upward trend of the school district's enrollment. Fall 2006 data are currently available from the California Department of Education but 2006 estimates are not yet available from the ACS. The enrollment gain between 2005 and 2006 is similar to the 2004 to 2005 growth but that would not be expected from the two recent years of decreasing enrollments in the ACS estimates.

### Tulare Joint Union High School Enrollment Estimates



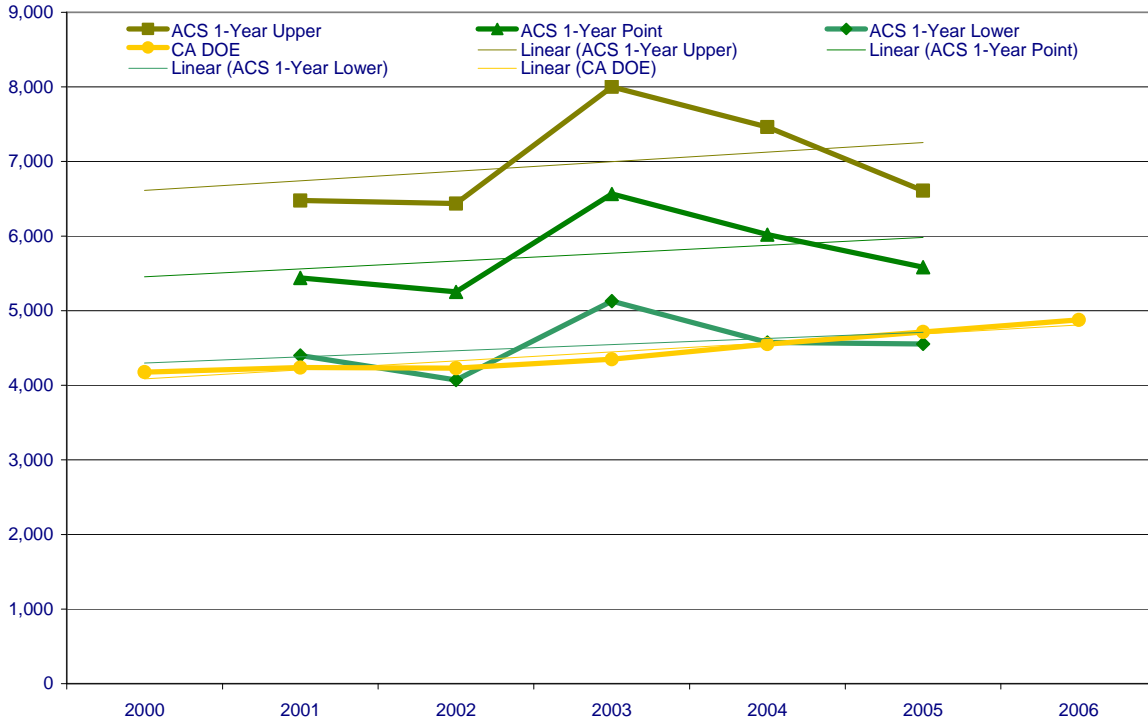
The aggregation of 3 or 5 years of data adds stability to the estimates and more clearly indicates the upward trend of enrollments. This graph of the point estimates of the 1-, 3-, and 5-year estimates along with the California Department of Education data illustrate the need for a couple of suggested practices when using ACS data: caution about attributing real change from one estimate period to the next and pitfalls in reliance on the point estimate without consideration of the margin of error or regard for the data series.

While it's helpful to compare administrative records and ACS estimates it will generally not be possible for most of the data collected in the survey. Administrative records, when available, are most likely to be at relatively high levels of geography such as zip code, place, or county. Data users will have extremely few external references to judge the appropriate ACS data to select. In the example above, the range of the 1-year estimates for 2005 is 4,555 to 6,609. Most users would likely select the point estimate in between. Were there a perfect correlation between the ACS estimates and the administrative records, the better choice would be the lower bound ACS estimate of 4,555 compared to the administrative data value of 4,714 students. In the absence of administrative records or other information the basic question about the 1-year estimates series is whether there is reason to suppose the enrollment fluctuates so much from year to year. A glance at the five years of 1-year data would call the 2003 estimate into question, especially after the 2004 and 2005 data were available.

A closer look at the ACS multi-year estimates series show the point estimates displayed above as well as upper and lower bounds and trend lines.

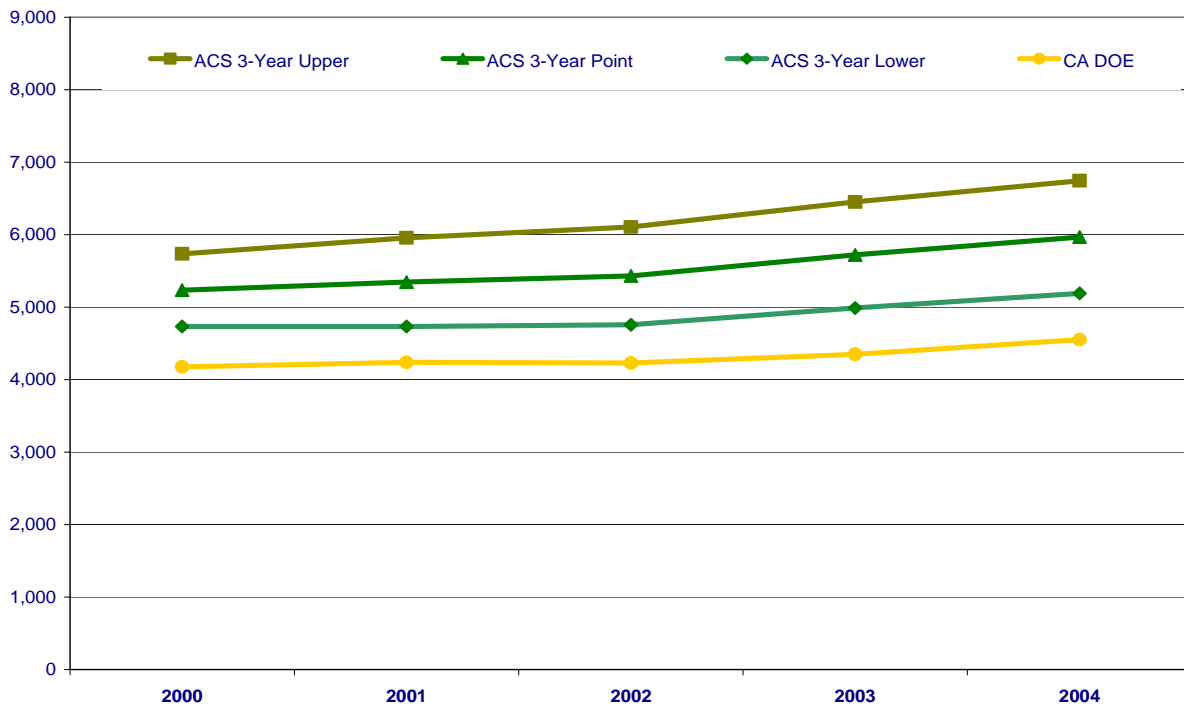


### Tulare Joint Union High School ACS 1-Year Enrollment Estimates and Trends



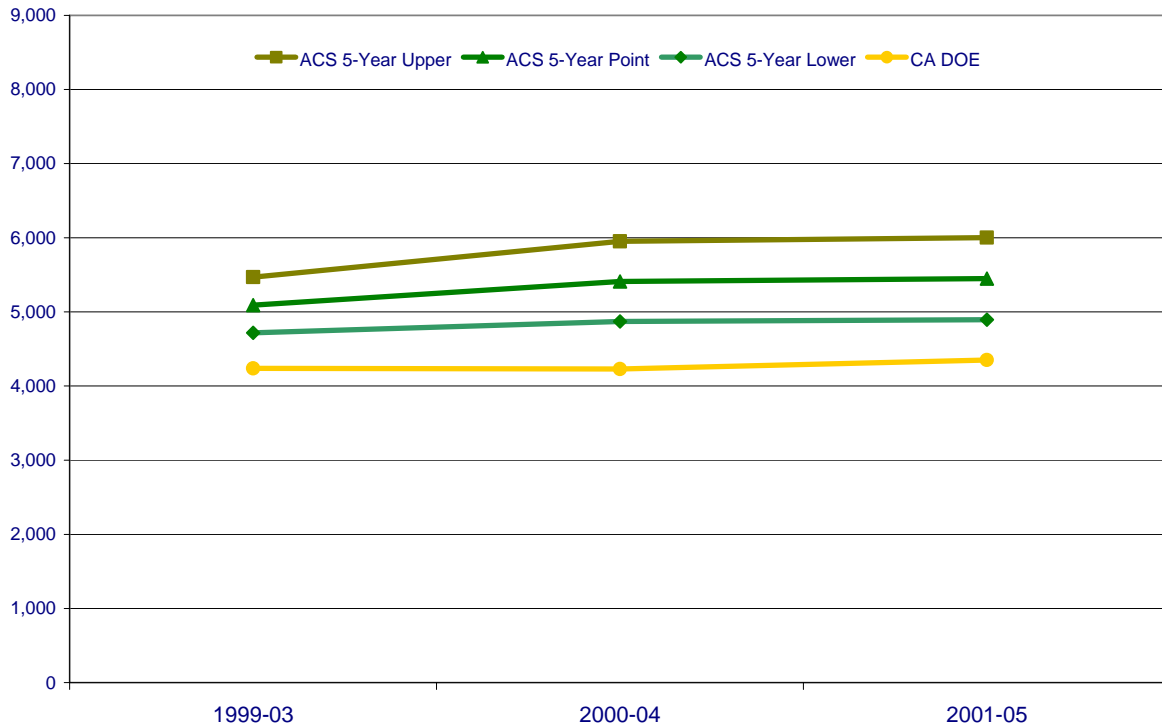
Comparing the 3-year ACS estimates with a pool of 36 months of data does stabilize the data series but does not measure real year to year change due to the overlap in the data.

### Tulare Joint Union High School ACS 3-Year Enrollment Estimates



Using the 5-year ACS estimates with a pool of 60 months of data further stabilizes the data, results in additional overlap in the data, and in fewer data points.

### Tulare Joint Union High School ACS 5-Year Enrollment Estimates



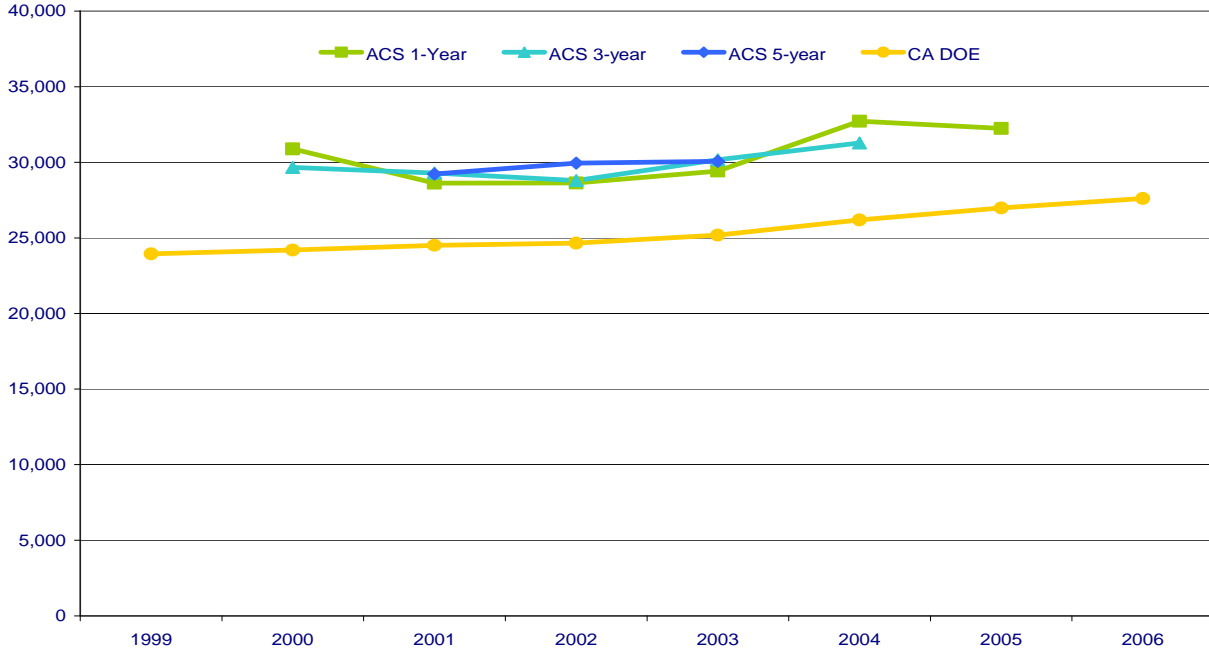
There has been discussion about which multi-year estimates to compare to other multi-year estimates or to administrative records. Some users advocate comparing those multi-year estimates with a common mid-point while others suggest comparing those with a common end-point. The examples above were centered on the common mid-point. For example, using the mid-point approach, in 2003 the 1-year estimate is for calendar year 2003; the 3-year estimate is for the period 2002-2004; and the 5-year estimate is for the period 2001-2005.

Multi-Year Estimates Reference Periods							
Mid-Point Reference Period Comparisons							
1-year	1999	2000	2001	2002	2003	2004	2005
3-year		1999-01	2000-02	2001-03	2002-04	2003-05	
5-year			1999-03	2000-04	2001-05		

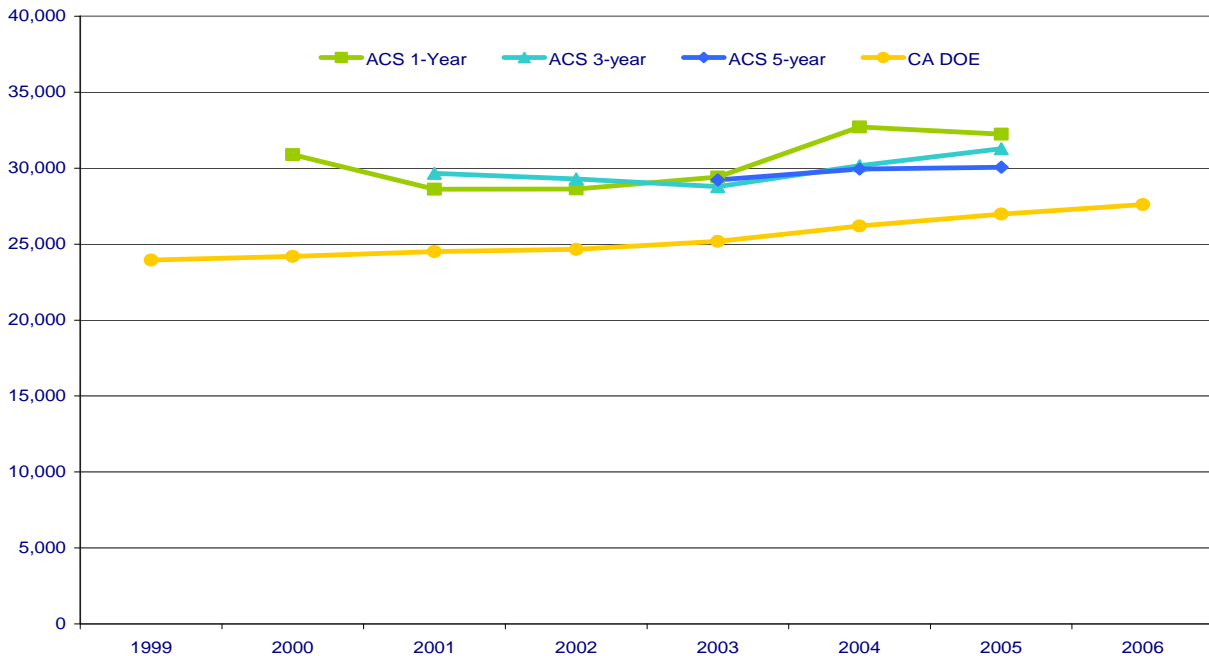
End-Point Reference Period Comparisons							
1-year	1999	2000	2001	2002	2003	2004	2005
3-year			1999-01	2000-02	2001-03	2002-04	2003-05
5-year					1999-03	2000-04	2001-05

Likewise, in the option to compare estimates that have the same ending date, the 1-year estimate for 2005 is calendar year 2005; the 3-year estimate is for the period 2003-2005; and the 5-year estimate is for the period 2001-2005. In the case of the 3- and 5-year enrollment data for Tulare Joint Union High School there is a very slightly better correspondence between the ACS and Department of Education data aligning the end-points. The following graphs display the mid- and end-year alignment of the 1-, 3-, and 5-year ACS data series.

**Tulare Joint Union Enrollments mid-year alignment**



**Tulare Joint Union Enrollments end-year alignment**



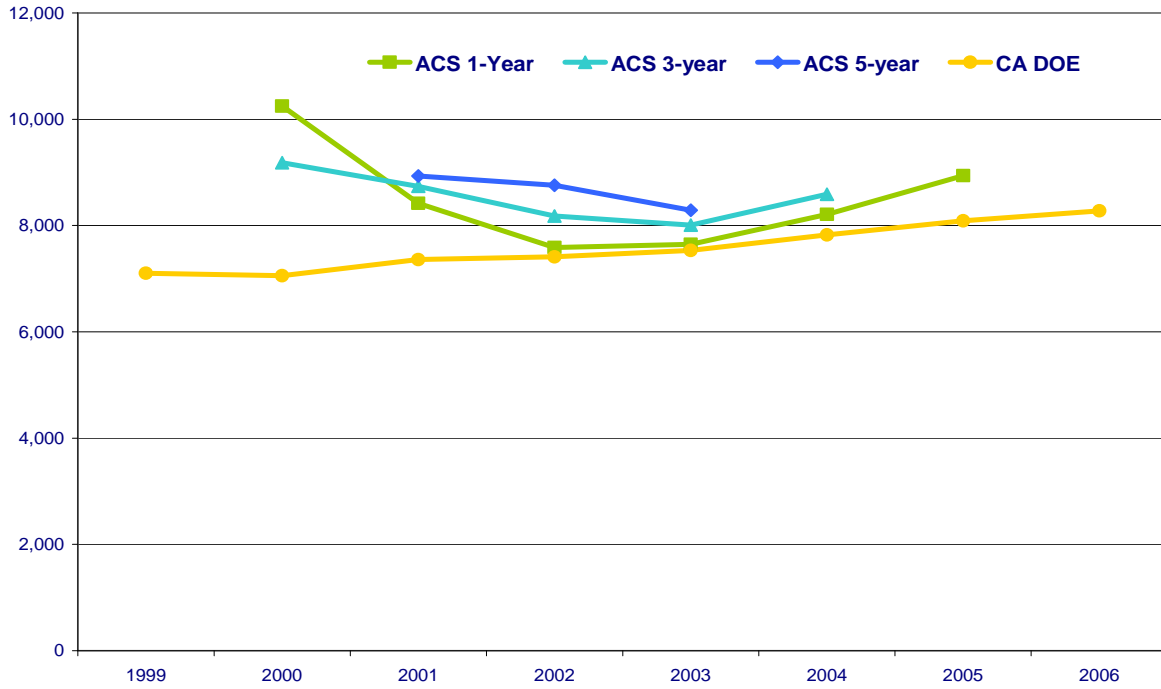
**Visalia Unified School District**

Visalia Unified School District is a larger district in Tulare County that has complete data for the 1-, 3- and 5-year ACS series. These are the ACS and California Department of Education data for the high school enrollment in this district.

<b>Visalia Unified School District Enrollment</b>						
	<b>Estimate Period</b>					
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Estimate Series</b>						
ACS 1-Year Upper	11,470	9,602	9,018	9,046	9,711	10,415
ACS 1-Year Point	10,247	8,418	7,588	7,648	8,211	8,938
ACS 1-Year Lower	9,024	7,234	6,158	6,250	6,711	7,461
ACS 3-Year Upper	9,807	9,559	8,963	8,874	9,366	
ACS 3-Year Point	9,185	8,737	8,178	8,010	8,587	
ACS 3-Year Lower	8,563	7,915	7,393	7,146	7,808	
ACS 5-Year Upper		9,467	9,334	8,881		
ACS 5-Year Point		8,933	8,759	8,288		
ACS 5-Year Lower		8,399	8,184	7,695		
CA DOE	7,054	7,358	7,411	7,531	7,825	8,089

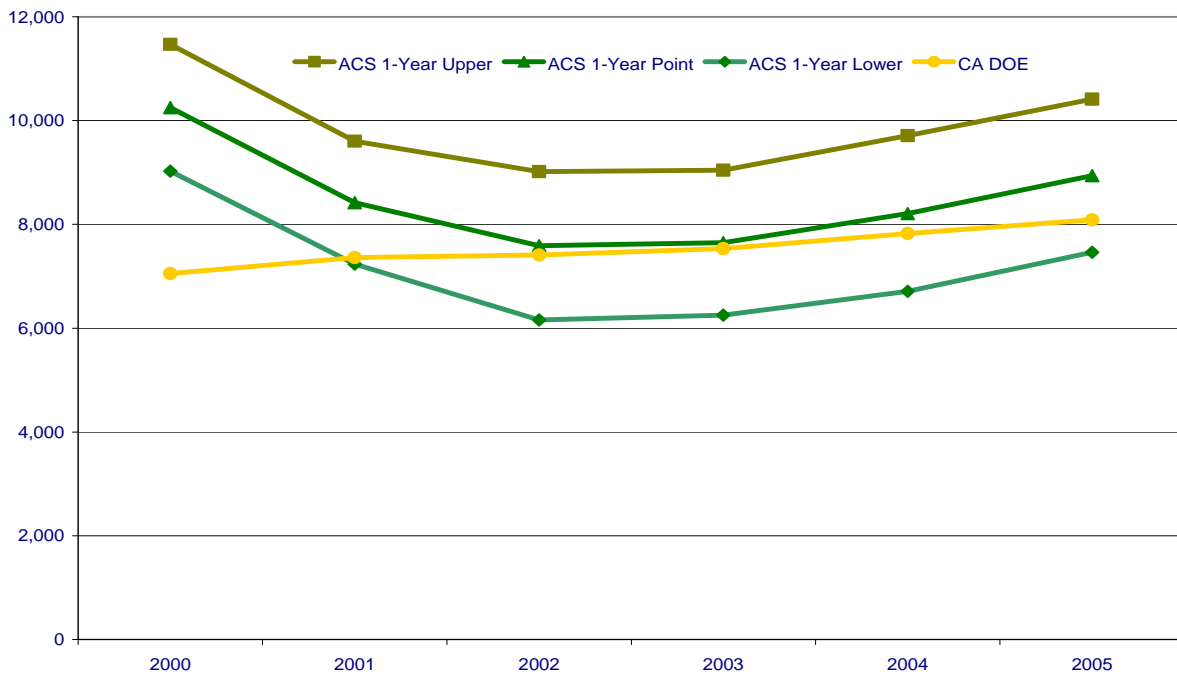
For this school district the State of California enrollment data fall easily within the bounds and quite close to the point estimates for many years. The very high ACS estimate for 2000 affects two of the five 3-year averages and two of the three 5-year averages. In the 1-, 3-, and 5-year estimates the enrollment trend line through the 2000-2005 period is negative unlike the consistently positive growth in enrollment reported to the state. The large discrepancy in the 2000 ACS data, along with the 2001 and 2002 1-year estimates could, at the time of their release, have affected local decisions concerning future high school enrollments and the need for facilities, staff, and programs.

### Visalia Unified School District Enrollment



The following graph of the ACS 1-year enrollment estimates with the upper and lower bounds again illustrates the value of examining the margin of error along with the point estimate.

### Visalia Unified School District ACS 1-Year Enrollment Estimates



## ACS Quality Measures

In addition to the margin of error for each estimate, the ACS quality measures include sample size, coverage rates, response rates, and item allocation rates.

### Margin of Error

This paper has mentioned the margin of error estimates and displayed tables and graphs with the margin of error expressed. For illustration, the table below is one sample table at the census tract level, a low level of geography, where the margins of error can be expected to be larger than for larger geographies like the entire school district, the city, the county, or the state.

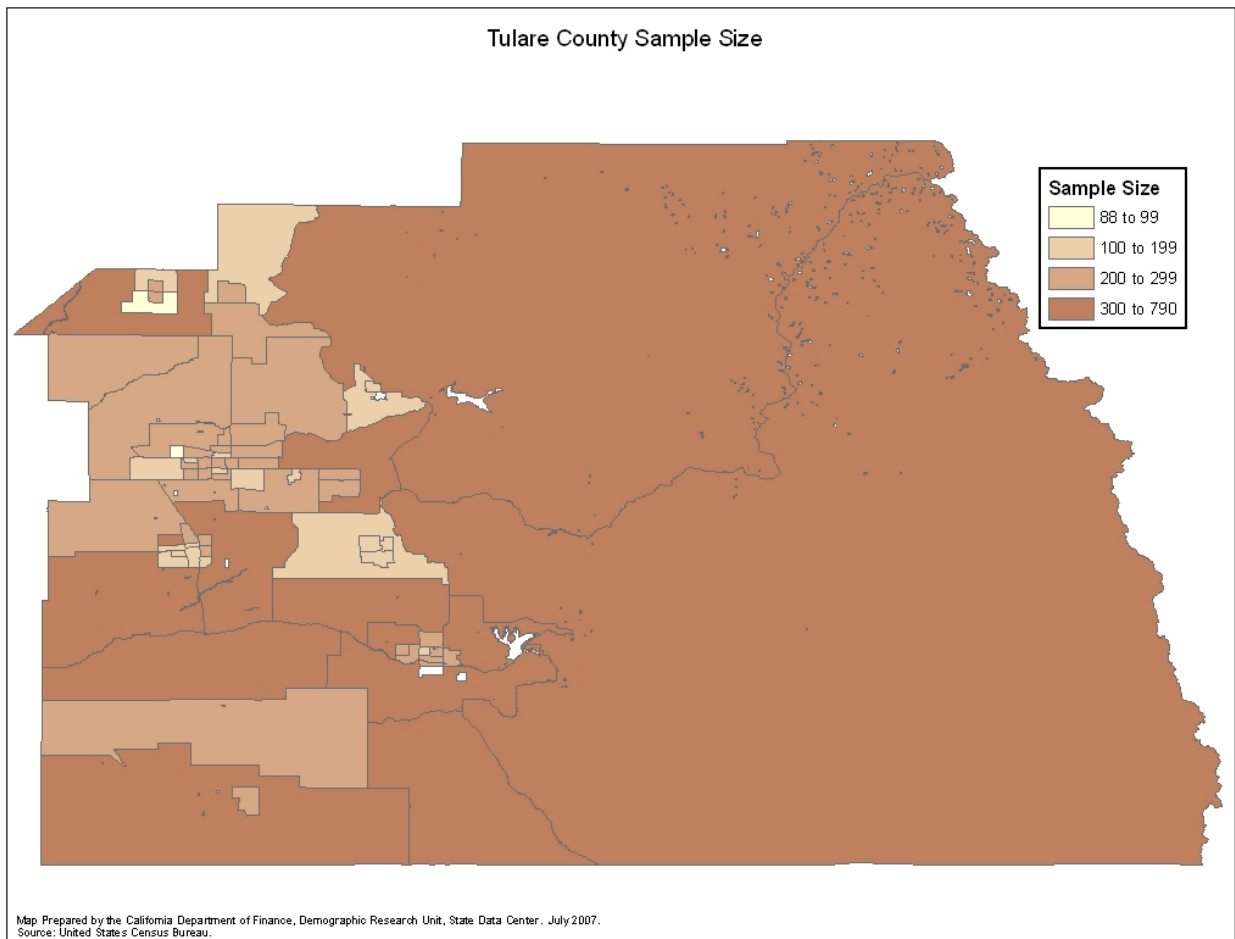
The user may have confidence that the true value has a 90 percent chance of falling within the estimate range described by adding the margin of error to and subtracting it from the point estimate. A user might have less confidence in the current estimate for census tract number 00202 where the estimate is 46 plus or minus 42 than in an estimate that was 46 plus or minus 5.

Tulare County 5-Yr. 2001-2005 Census Tract Estimates: High School Enrollment								
Tulare Joint Union High School District			Visalia Unified School District					
Tract	HS Enr.	+/-	Tract	HS Enr.	+/-	Tract	HS Enr.	+/-
000100	289	+/-88	001601	450	+/-139	002700	392	+/-238
000201	630	+/-207	001602	699	+/-193	002800	197	+/-81
000202	46	+/-42	001701	320	+/-133	002901	275	+/-134
000301	340	+/-118	001703	302	+/-106	002903	362	+/-120
000302	226	+/-86	001704	269	+/-139	002904	356	+/-140
000401	301	+/-112	001800	317	+/-135	003001	439	+/-171
000402	385	+/-86	001901	207	+/-78	003002	246	+/-101
000501	582	+/-173	001902	371	+/-146	003100	284	+/-103
000502	282	+/-110	002002	193	+/-85	003200	410	+/-133
000600	675	+/-227	002003	366	+/-124	003300	592	+/-219
000701	410	+/-167	002004	227	+/-100	003400	410	+/-106
000702	535	+/-155	002006	213	+/-91	003500	1,022	+/-213
000800	758	+/-218	002007	397	+/-195	003601	677	+/-211
000900	357	+/-115	002008	70	+/-41	003602	412	+/-167
001003	575	+/-152	002009	299	+/-132	003700	301	+/-112
001004	743	+/-217	002100	195	+/-80	003801	153	+/-72
001005	94	+/-53	002201	865	+/-236	003802	205	+/-132
001006	273	+/-121	002202	465	+/-206	003901	551	+/-172
001100	595	+/-204	002302	346	+/-117	003902	671	+/-180
001200	61	+/-58	002303	423	+/-140	004101	620	+/-192
001301	537	+/-164	002304	176	+/-112	004200	552	+/-171
001302	463	+/-156	002400	415	+/-110	004300	511	+/-142
001400	344	+/-134	002500	283	+/-135	004400	540	+/-166
001501	240	+/-109	002601	482	+/-188	004500	647	+/-164
001502	496	+/-188	002602	381	+/-114			

### Sample Size

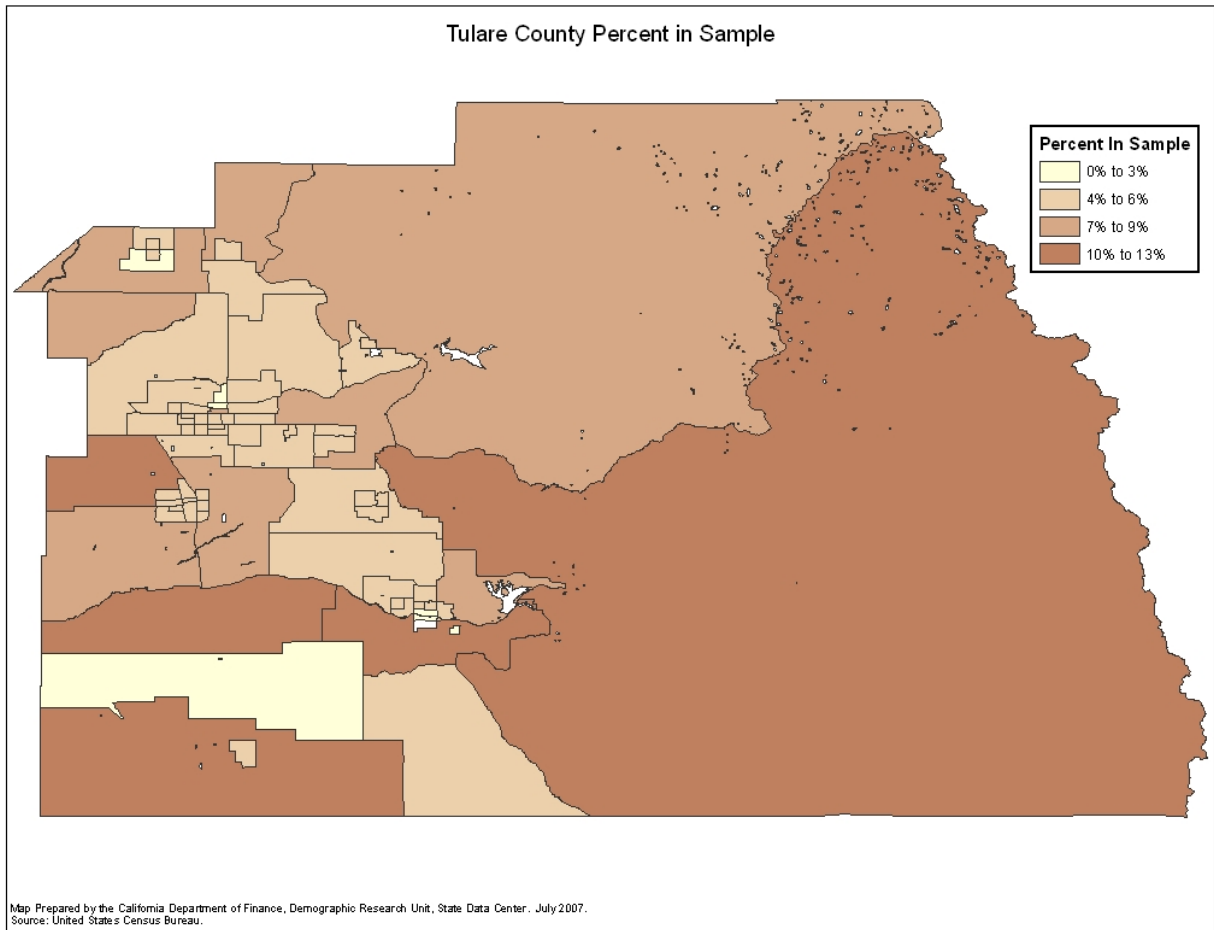
There is a measure of the number of addresses initially selected for the ACS; however, throughout the survey process some address are found to be nonexistent or non-household, some addresses are not contacted during the non-response follow-up phase, and persons at some addresses refuse to participate in the survey. There is an additional measure of the number of final interviews that are conducted either by response by mail, phone, or to an interviewer. Approximately one-in-three households that do not respond by mail or telephone are selected for interviewer follow-up.

Sample size by census tract is available in the 5-year ACS series. The map displays the distribution of the Tulare County sample in 2001-2005. The sample size in the Tulare County census tracts ranged from 88 to 790. A tract or two had a sample size of 88 to 99 followed by a few tracts with a sample size between 100 and 199. In the tracts shaded light brown the sample size was 200 to 299 and in the tracts shaded darkest brown the sample size was 300 to 790.



The sample in 1999 through 2001 was augmented in the ACS comparison counties so the 3-year period data could be compared to the 2000 decennial census. The large drop in the initial addresses selected, the potential sample size, in 2002 is consistent with the sampling methodology designed for full implementation across the country. The percent of the housing units interviewed, calculated by dividing the number of final interviews by the ACS estimate of total housing units, also dropped in 2002. That drop is partially due to budget constraints that caused the loss of data for a sample month. These decreases could raise some questions about data quality, they certainly underscore the importance of sufficient on-going budgets and sufficient sample sizes for the ACS.

The next map shows the percent of tract population that was in the ACS sample in the 2001-2005 period. The lightest shaded areas have 0 to 3 percent of the population in the sample, followed by 4 to 6 percent and 7 to 9 percent. In the darkest shaded areas, 10 to 13 percent of the tract's population was in the ACS sample.

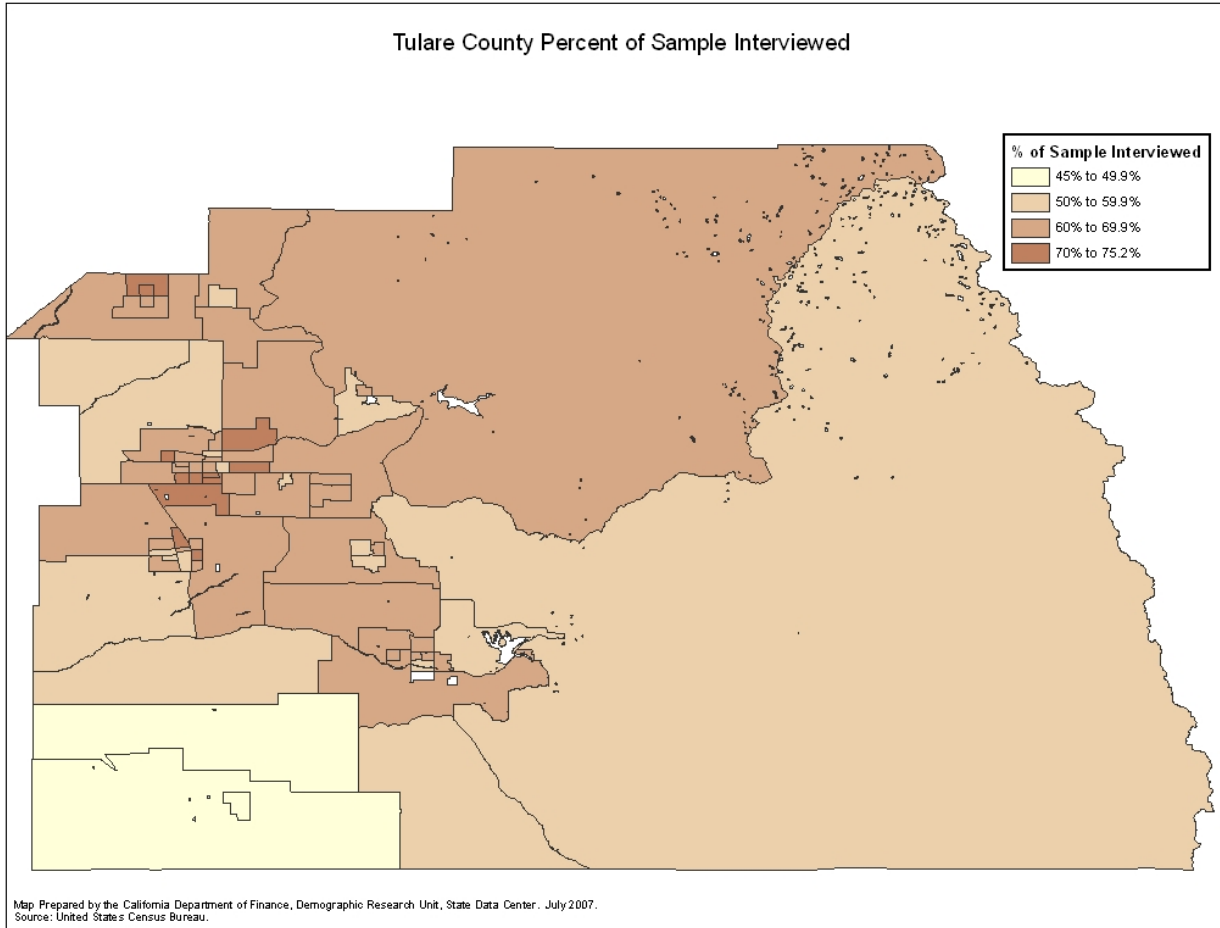


The next table displays the number of housing units in the Tulare County sample along with the number of addresses selected and the percent of housing units interviewed.

<b>ACS Sample -- Tulare County</b>						
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Housing Units</b>						
1-yr.	119,639	121,487	123,121	124,970	126,792	129,128
3-yr.	120,189	121,542	123,196	124,824	126,882	
5-yr.		121,734	123,174	125,001		
<b>Addresses Selected</b>						
1-yr.	6,339	5,858	2,818	3,433	3,453	3,407
3-yr.	17,926	15,015	12,115	9,704	10,293	
5-yr.		24,202	21,926	18,975		
<b>Percent of Housing Units Interviewed</b>						
1-yr.	3.3	3.0	1.3	1.7	1.7	1.7
3-yr.	9.5	7.6	6.0	4.7	5.1	
5-yr.		12.4	11.0	9.4		



The initial addresses selected for the 5-year estimates in the 2001-2005 period in Tulare County census tracts ranged from 88 to 790 based on the number of housing units. The percent of final interviews from those initial addresses ranged from 45 to 75 percent. The map shows the percent of final interviews from the sample population in 2001-2005. The lowest percent of completed interviews was in the 45 to 54 percent range followed by 55 to 62 percent, 63 to 69 percent and the highest was 69 to 75 percent.



### Coverage Rates

Coverage rates are the comparison of the weighted ACS population estimate of an area or group to the Census Bureau's independent estimate for that area or group. These rates are calculated only at the county level for the total population and by gender. Coverage rates for the Tulare County 1-year estimates range from 89 to 97 percent, 90-93 percent for the 3-year estimates and 90 to 92 percent for the 5-year estimates. Recall that the follow-up for non-responding households overall is about 1-in-3.

ACS Coverage Rates						
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
<b>Tulare</b>						
1-yr.	96.5	89.4	92.5	92.5	89.3	91.3
3-yr.	90.9	92.6	91.4	90.8	90.5	
5-yr.		91.5	91.5	89.5		

### Response Rates

The ACS response rates are the comparison of the weighted estimate of interviews and the weighted estimate of units that were eligible to be interviewed. Response rates for the Tulare County 1-year estimates ranged from 92 to 98 percent and 95 to 96 percent for the 3-year and 5-year estimates.

ACS Response Rates						
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
<b>Tulare</b>						
1-yr.	97.5	93.3	92.3	97.7	93.0	98.1
3-yr.	96.5	94.7	94.6	94.6	96.3	
5-yr.		96.0	95.0	95.0		

Data by mode of data collection are helpful in understanding the final response rates as the following recent performance measures demonstrate. An area's response rate can be partitioned into three interview rates by mode. The final column is the non-response rate.

For example, in the table of interview rates by mode, Tulare County has an overall response rate of 98.3 percent. That is the sum of the three interview rates: the 38.9 percent mail, the 14.1 percent phone, and the 45.3 percent personal visit follow-up.

Interview Rates by Mode					
Area	% Mail	% Phone	% Personal Visit	Total Response	% Non-Response
Nation	47.9	9.4	40.5	97.8	2.2
California	44.8	8.9	43.6	97.3	2.7
Tulare	38.9	14.1	45.3	98.3	1.7
San Francisco	50.5	7.8	38.1	96.4	3.6

Source: 2006 ACS 4th quarter performance measures summary.

Unlike Census 2000, ACS enumerators do not visit 100 percent of the non-responding households. In general, there is an overall personal visit follow-up of 1-in-3 households. In this case, the 45.3 percent personal visit response rate is based on the 1-in-3 sample being weighted to approximate a 100 percent follow-up. The overall percent contributed by completed personal interviews is 15.1 or fewer. These interviews are weighted to achieve the 45.3 percent rate. An unweighted measure of the response rate is closer to 68.1 percent. Since respondents in this mode are weighted by a factor of three or more, these completed interviews have the potential to substantially affect the demographic, social, economic and housing characteristics reported in the ACS especially in non-homogeneous areas with low mail response rates and high proportions of non-response follow-up.

**Allocation Rates**

It is easier to collect some data items than others. Most people understand, know the answer, and respond to questions about their gender, age, or housing tenure. Allocation rates, the processing of “filling in the blanks”, are low for these items. At the other end of the scale are items such as yearly real estate taxes, yearly property insurance, or year of entry to the United States that are harder to collect. In Tulare County these items have allocation rates around 30 percent. These rates can be very helpful in assessing the quality of specific variables in the ACS as they were in evaluating the decennial census data.

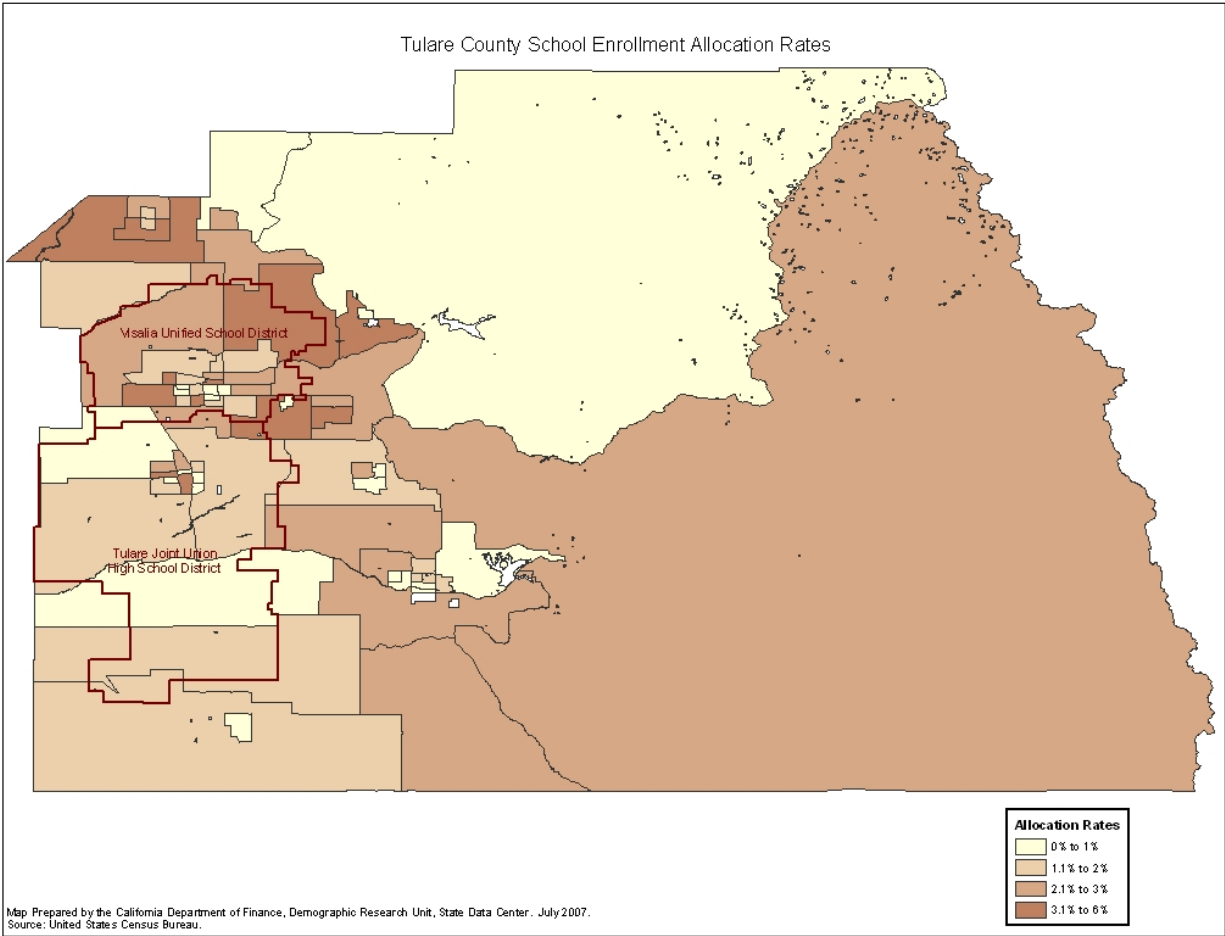
For the data discussed earlier on high school enrollment, two allocation rates are available: school attendance and grade level attending. The allocation rates for school attendance vary somewhat between 1 and 4 percent in the 1-year estimates for each school district.

<b>School Enrollment Allocation Rates</b>						
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Tulare Joint Union High School</b>						
1-yr.		1.2	2.6	1.6	2.0	3.5
3-yr.	2.5	2.9	1.8	1.9	2.4	
5-yr.		2.4	2.5	2.3		
<b>Visalia Unified School District</b>						
1-yr.	3.7	2.7	3.1	1.4	1.7	1.9
3-yr.	3.3	3.2	2.5	2.2	1.8	
5-yr.		2.9	2.7	2.4		

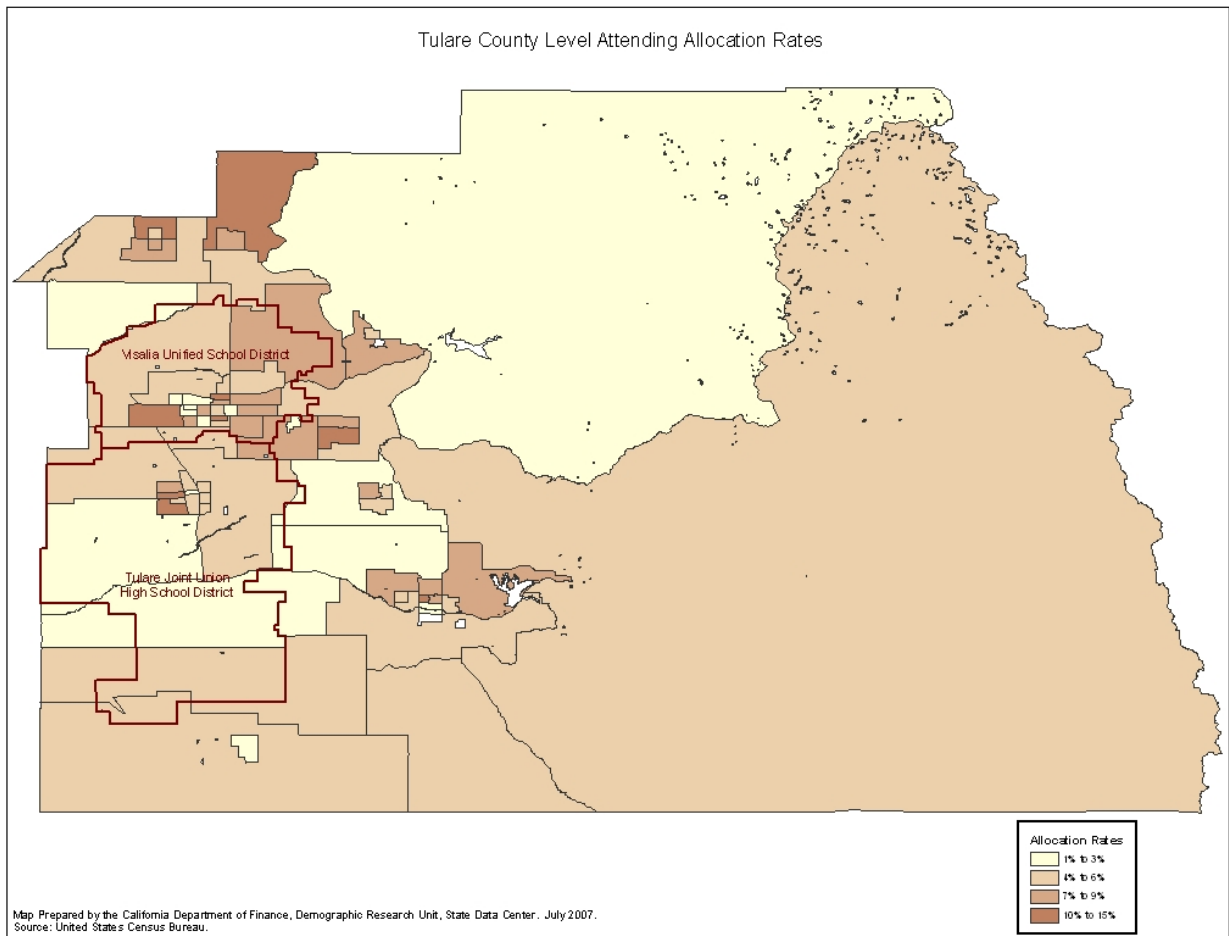
The allocation rates for grade level attending are somewhat higher for each school district. If there is an 8.4 percent allocation rate for grade level attending as there was for Tulare Joint Union High School District in 2003, this can be interpreted as “8.4 percent of the population age 3+ enrolled in school had their grade level allocated.” However, from the published data it cannot be determined what percentage of that 8.4 percent also had their school enrollment allocated. Overall, 1.6 percent of the number enrolled in school had data allocated.

Grade Level Attending Allocation Rates						
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
<b>Tulare Joint Union High School</b>						
1-yr.		2.4	4.3	8.4	6.1	6.7
3-yr.	4.3	4.6	5.6	6.3	7.1	
5-yr.		5.1	5.8	5.9		
<b>Visalia Unified School District</b>						
1-yr.	6.0	6.2	5.6	7.9	5.3	5.8
3-yr.	6.1	5.9	6.3	6.4	6.3	
5-yr.		6.2	6.2	6.0		

The map below presents the census tract allocation rates for the enrollment data. Yellow represents up to 1 percent, tan from 1 to 2 percent, chocolate from 2 to 3 percent, and dark brown from 3 to 6 percent. The Visalia Unified School District is outlined in red just above the Tulare Joint Union High School District. Higher rates of allocation were necessary in the Visalia School district.



The second map shows the census tract allocation rates for the grade level attending data. Yellow represents 1 to 3 percent, tan from 4 to 6 percent, chocolate from 7 to 9 percent, and dark brown from 10 to 15 percent. The Visalia School district continued to have higher rates of allocation.



## Residence Abroad One Year Ago Comparisons

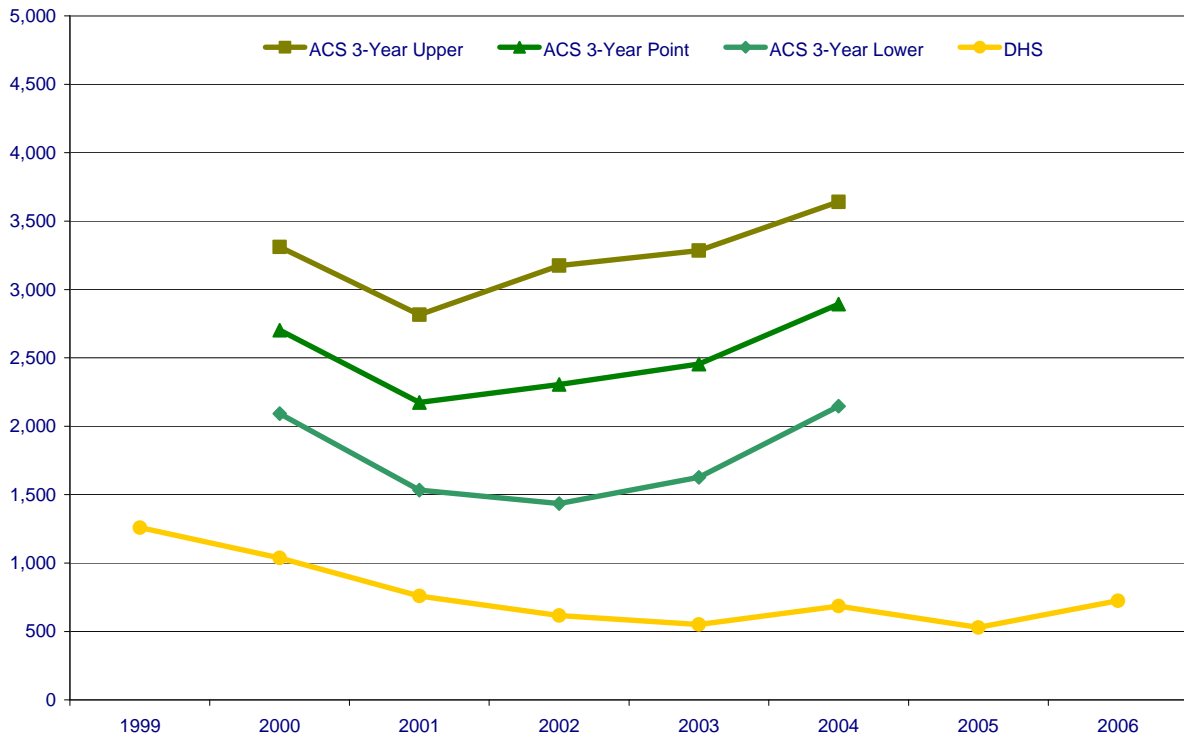
The Demographic Research Unit has an interest in data sources to estimate foreign immigration for the State of California's official population estimates and is evaluating the ACS. The ACS asks respondents for the residence one year ago for those 1 year and older during a calendar year. The Department of Homeland Security's (DHS) Office of Immigration Statistics reports new foreign residents who are granted legal permanent residence during the federal fiscal year (October through September). The DHS data do not include those admitted with a visa, those who have applied for legal permanent residence and are awaiting a decision, the unauthorized, and U.S. citizens and legal permanent residents returning to this country from abroad. Some persons residing abroad one year ago may not have been foreign-born.

Data displayed in the following graphs are for Tulare County with a household population exceeding 350,000 persons.

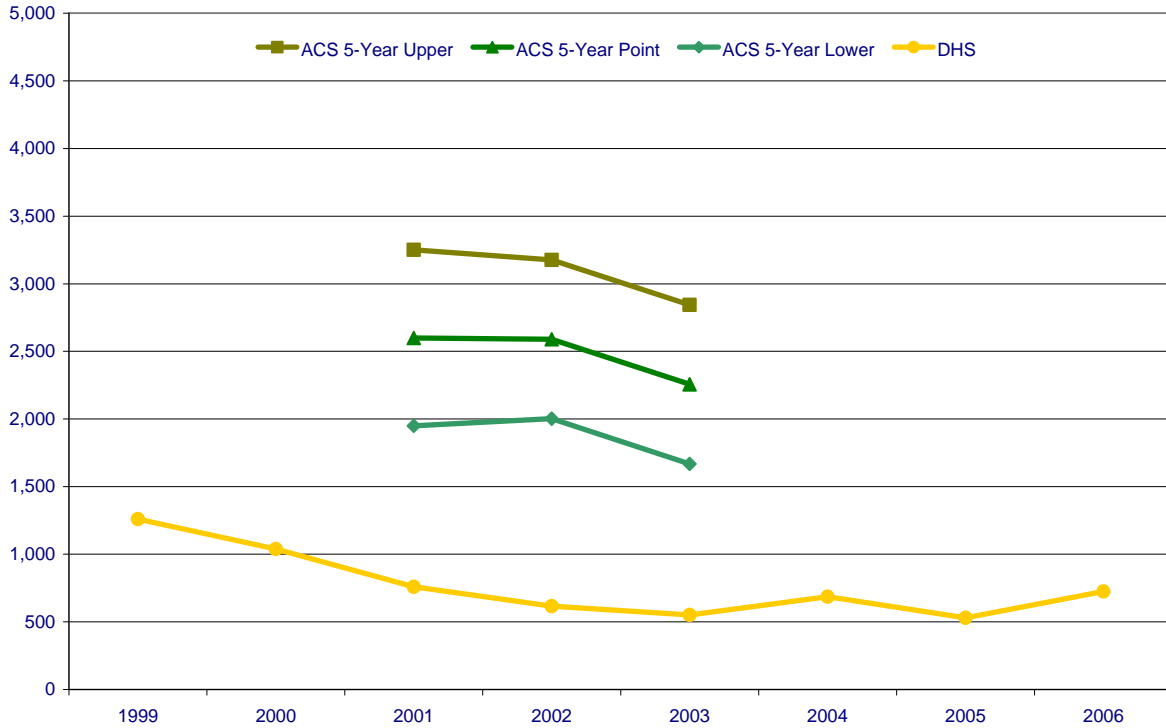
### Tulare County Residence One Year Ago ACS 1-Year Estimates



### Tulare County Residence One Year Ago ACS 3-Year Estimates

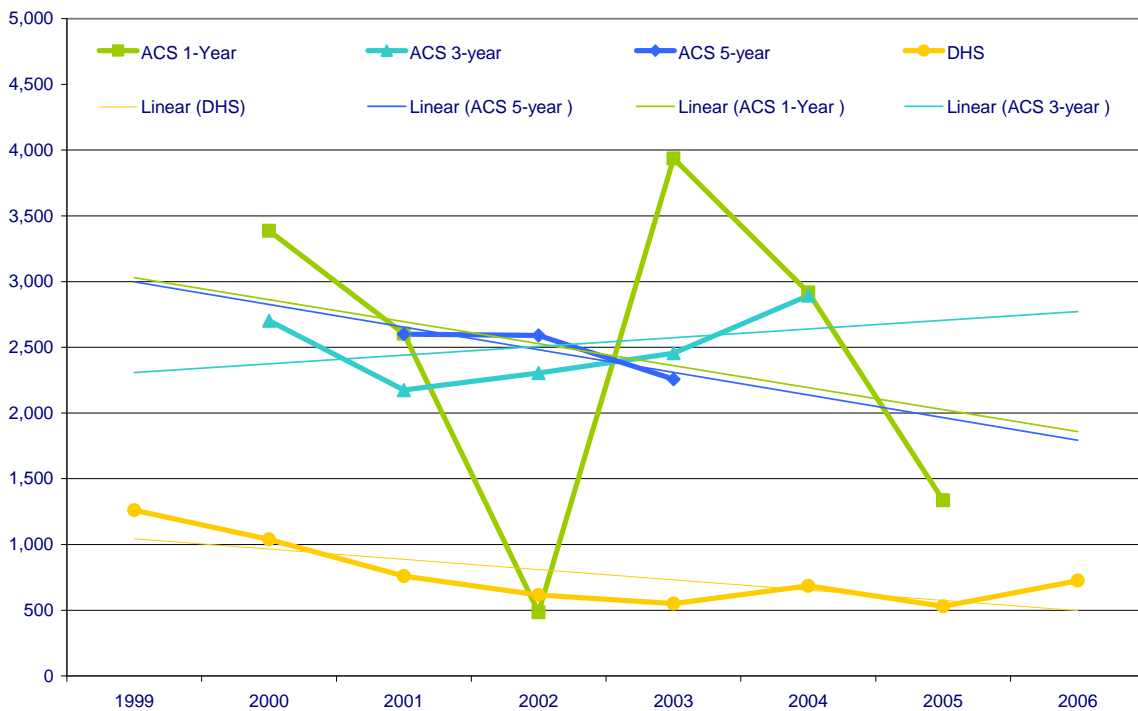


### Tulare County Residence One Year Ago ACS 5-Year Estimates



Though at different levels, the administrative data from the Department of Homeland Security along with the ACS 1- and 5-year estimates show similar, slightly downward trends while the ACS 3-year estimates show an upward trend.

### Tulare County Residence One Year Ago ACS Series and Trends

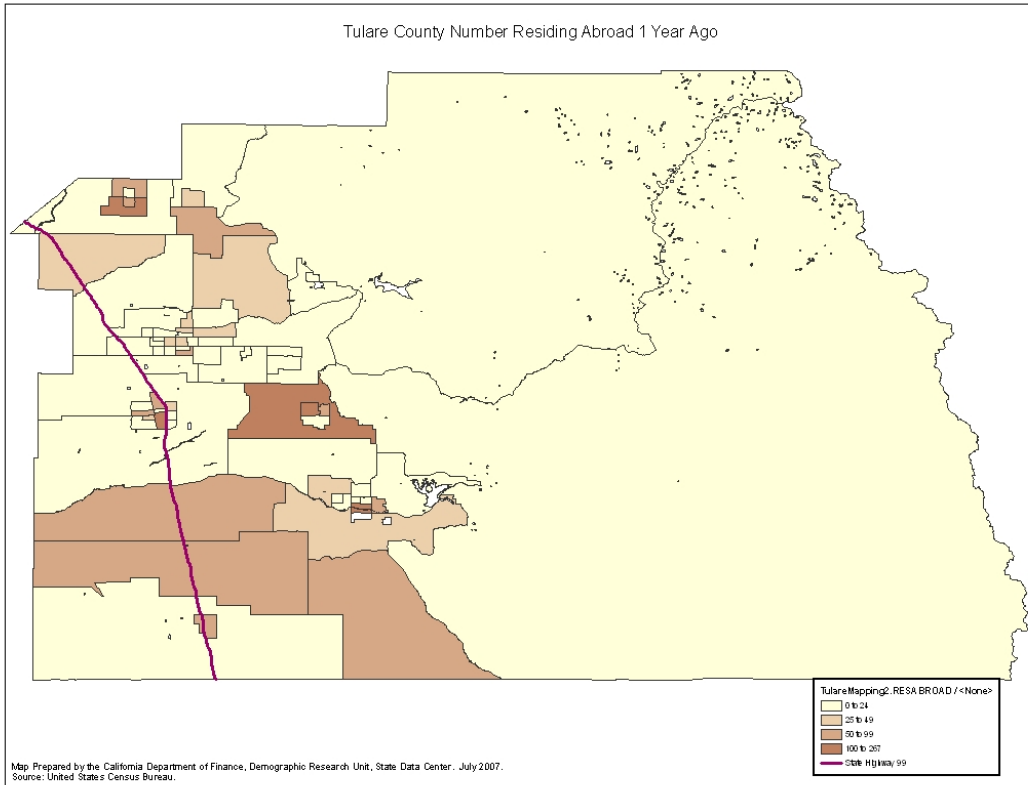


Census tract estimates of residence abroad one year ago are available in the 5-year ACS series. The following table shows the point estimate for each census tract and the margin of error. The Tulare County 2001-2005 point estimates of the population with a residence abroad 1 year ago by census tract ranges from 0 to 147. Twenty-four of the tracts, one-third, have an estimate of zero, 14 have 1 to 10, 5 tracts have more than 100, and the rest are between 10 and 100. The tract with the highest number of persons with a residence abroad one year ago has an estimate of 267 +/-308. In 93 percent of the tracts the margin of error exceeds the estimate and in the other 5 tracts the margin of error is very close to the point estimate. The range of the estimate for tracts with a point estimate of zero is plus or minus 119. Such a description can be very confusing to a data user.

The map below displays the point estimate of the number of persons in Tulare County residing abroad one year ago by census tract. The yellow shade represents 0 to 24 persons, tan is 25 to 49, chocolate is 55 to 99, and dark brown is 100 or more. The purple line is State Highway 99 and the two large tracts on the right are wilderness areas in and around Sequoia National Park.

<b>Tulare County 5-Yr. 2001-2005 Census Tract Estimates</b>								
<b>Point Estimate and Margin of Error of Residence Abroad 1 Year Ago</b>								
<b>Tract</b>	<b>Abroad</b>	<b>+/-</b>	<b>Tract</b>	<b>Abroad</b>	<b>+/-</b>	<b>Tract</b>	<b>Abroad</b>	<b>+/-</b>
000100	13	+/-20	001601	16	+/-26	002700	0	+/-119
000201	37	+/-62	001602	0	+/-119	002800	0	+/-119
000202	0	+/-119	001701	0	+/-119	002901	113	+/-180
000301	4	+/-8	001703	0	+/-119	002903	10	+/-17
000302	34	+/-36	001704	0	+/-119	002904	9	+/-15
000401	74	+/-70	001800	49	+/-53	003001	39	+/-62
000402	0	+/-119	001901	0	+/-119	003002	16	+/-23
000501	84	+/-90	001902	62	+/-88	003100	0	+/-119
000502	137	+/-232	002002	47	+/-81	003200	53	+/-63
000600	57	+/-51	002003	0	+/-119	003300	6	+/-10
000701	12	+/-23	002004	22	+/-39	003400	35	+/-42
000702	0	+/-119	002006	10	+/-17	003500	27	+/-32
000800	27	+/-48	002007	8	+/-14	003601	0	+/-119
000900	0	+/-119	002008	9	+/-14	003602	0	+/-119
001003	5	+/-10	002009	0	+/-119	003700	0	+/-119
001004	35	+/-27	002100	15	+/-16	003801	0	+/-119
001005	0	+/-119	002201	9	+/-17	003802	4	+/-8
001006	12	+/-21	002202	78	+/-75	003901	91	+/-133
001100	41	+/-52	002302	31	+/-37	003902	10	+/-16
001200	9	+/-16	002303	61	+/-99	004101	267	+/-308
001301	0	+/-119	002304	0	+/-119	004200	51	+/-47
001302	31	+/-52	002400	0	+/-119	004300	10	+/-12
001400	0	+/-119	002500	147	+/-188	004400	54	+/-62
001501	8	+/-14	002601	112	+/-168	004500	66	+/-45
001502	0	+/-119	002602	71	+/-116			





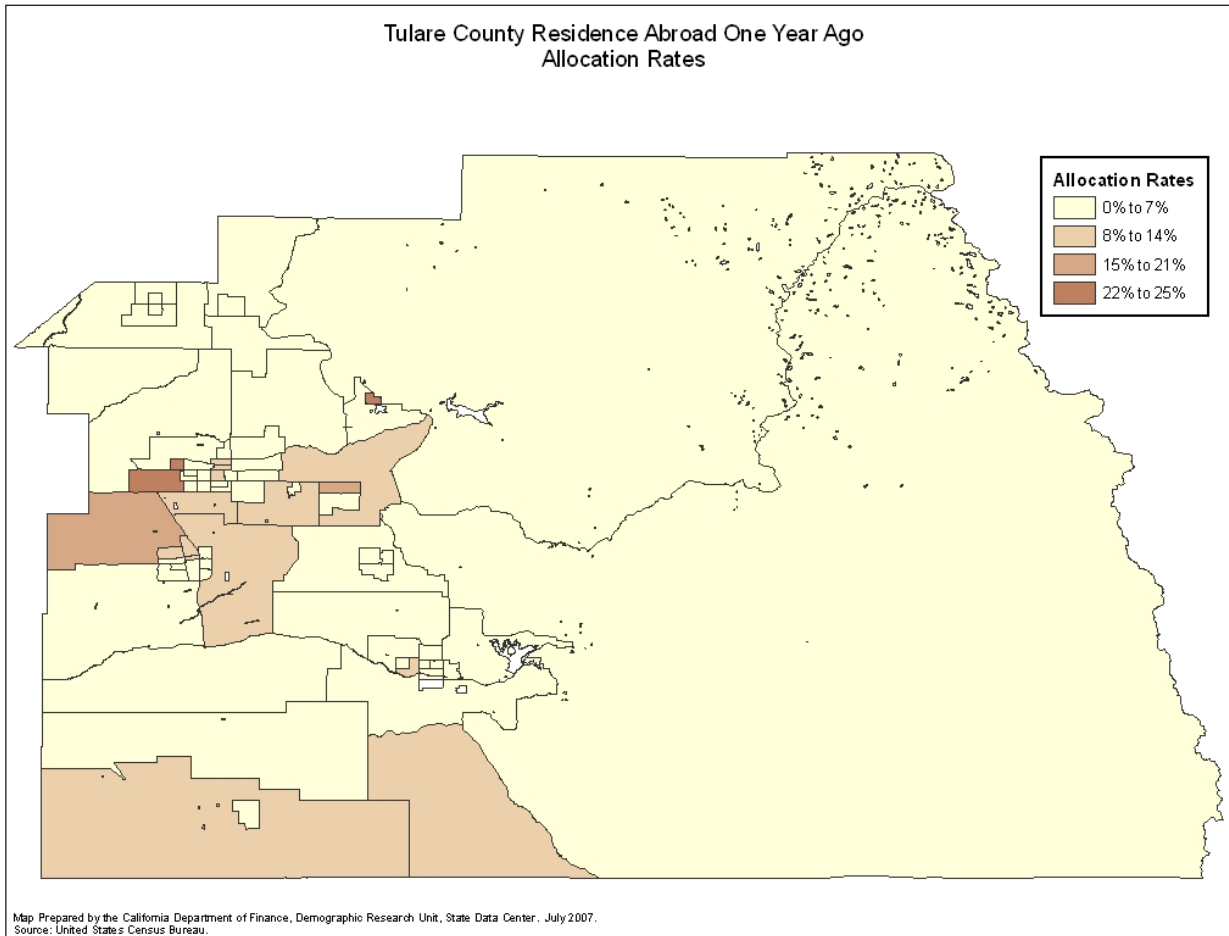
Another way to display the tabular data is to present the range calculated from the point estimate and the margin of error.

<b>Tulare County 5-Yr. 2001-2005 Census Tract Estimates</b>					
<b>Estimate Range of Residence Abroad 1 Year Ago</b>					
<b>Tract</b>	<b>Abroad</b>	<b>Tract</b>	<b>Abroad</b>	<b>Tract</b>	<b>Abroad</b>
000100	-7 to 33	001601	-10 to 42	002700	-119 to 119
000201	-25 to 99	001602	-119 to 119	002800	-119 to 119
000202	-119 to 119	001701	-119 to 119	002901	-67 to 293
000301	-4 to 12	001703	-119 to 119	002903	-7 to 27
000302	-2 to 70	001704	-119 to 119	002904	-6 to 24
000401	4 to 144	001800	-4 to 102	003001	-23 to 101
000402	-119 to 119	001901	-119 to 119	003002	-7 to 39
000501	-6 to 174	001902	-26 to 150	003100	-119 to 119
000502	-95 to 369	002002	-34 to 128	003200	-10 to 116
000600	6 to 108	002003	-119 to 119	003300	-4 to 16
000701	-11 to 35	002004	-17 to 61	003400	-7 to 77
000702	-119 to 119	002006	-7 to 27	003500	-5 to 59
000800	-21 to 75	002007	-6 to 22	003601	-119 to 119
000900	-119 to 119	002008	-5 to 23	003602	-119 to 119
001003	-5 to 15	002009	-119 to 119	003700	-119 to 119
001004	8 to 62	002100	-1 to 31	003801	-119 to 119
001005	-119 to 119	002201	-8 to 26	003802	-4 to 12
001006	-9 to 33	002202	3 to 153	003901	-42 to 224
001100	-11 to 93	002302	-6 to 68	003902	-6 to 26
001200	-7 to 25	002303	-38 to 160	004101	-41 to 575
001301	-119 to 119	002304	-119 to 119	004200	4 to 98
001302	-21 to 83	002400	-119 to 119	004300	-2 to 22
001400	-119 to 119	002500	-41 to 335	004400	-8 to 116
001501	-6 to 22	002601	-56 to 280	004500	21 to 111
001502	-119 to 119	002602	-45 to 187		

This will be a new era in assisting data users. Some may not be pleased to hear the estimate for the census tract of interest is -119 to +119 or -41 to 575 but these are the numbers for certain census tracts and they underlie the county level estimates.

At this time the ACS 1-year estimates of residence abroad data are too erratic for use in the state's population estimates and the 3- and 5-year estimates are not considered current enough for use in the official biannual estimates. Though I will continue to monitor the data for potential future use, an additional concern with the usefulness of this data item is the relatively high allocation rates.

The following map shows rates ranging from 0 to 7 percent in the yellow shaded tracts, 8 to 14 percent in tan areas, 15 to 21 percent in the chocolate colored tracts and 22 to 25 percent in the dark brown areas.



## Vacancy Rate Comparisons

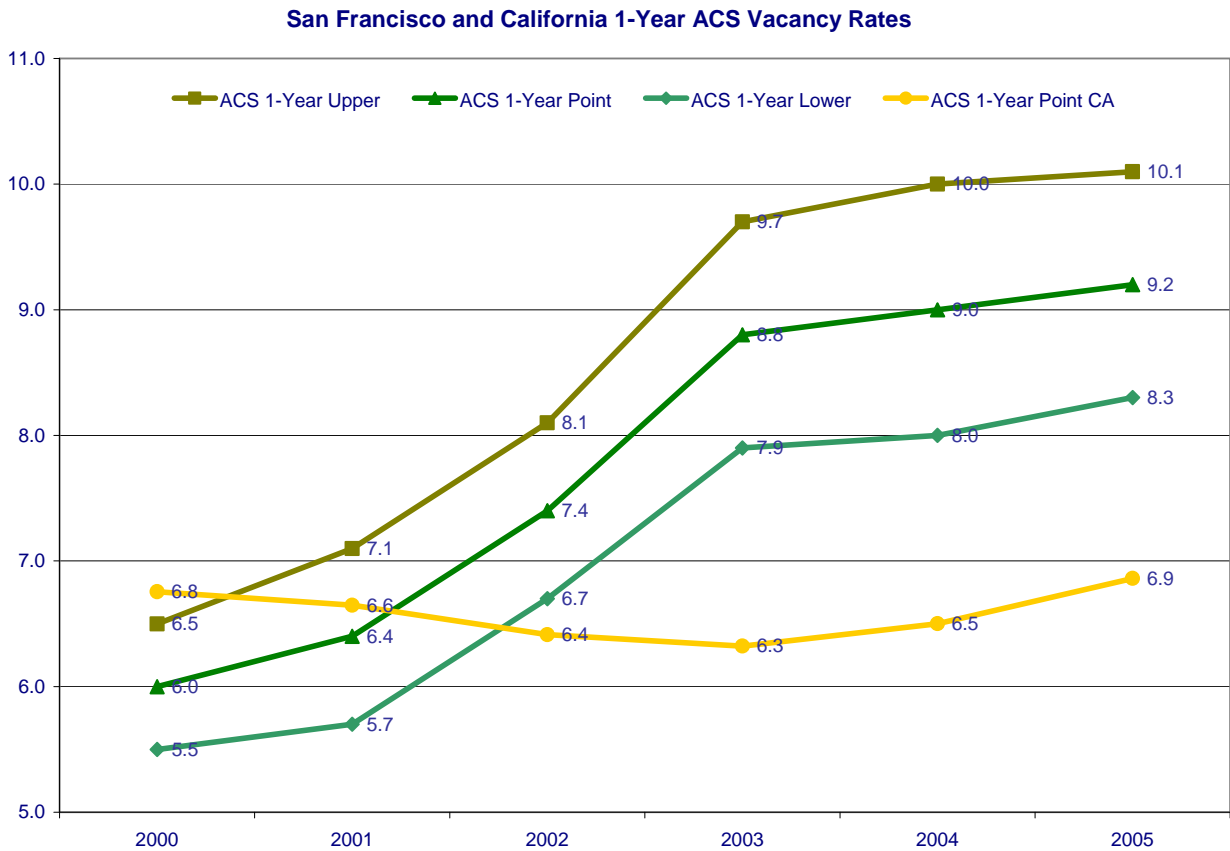
I also wanted to explore the ACS data for help in determining the annual vacancy rates for potential future use in the State of California population estimates since we have generally been holding the vacancy rates relatively constant from one decennial census to the next.

### San Francisco County

The ACS is showing vacancy status in the City and County of San Francisco increasing from a range of 5.5 to 6.6 percent for the 2000 period to 8.3 to 10.1 percent for the 2005 period.

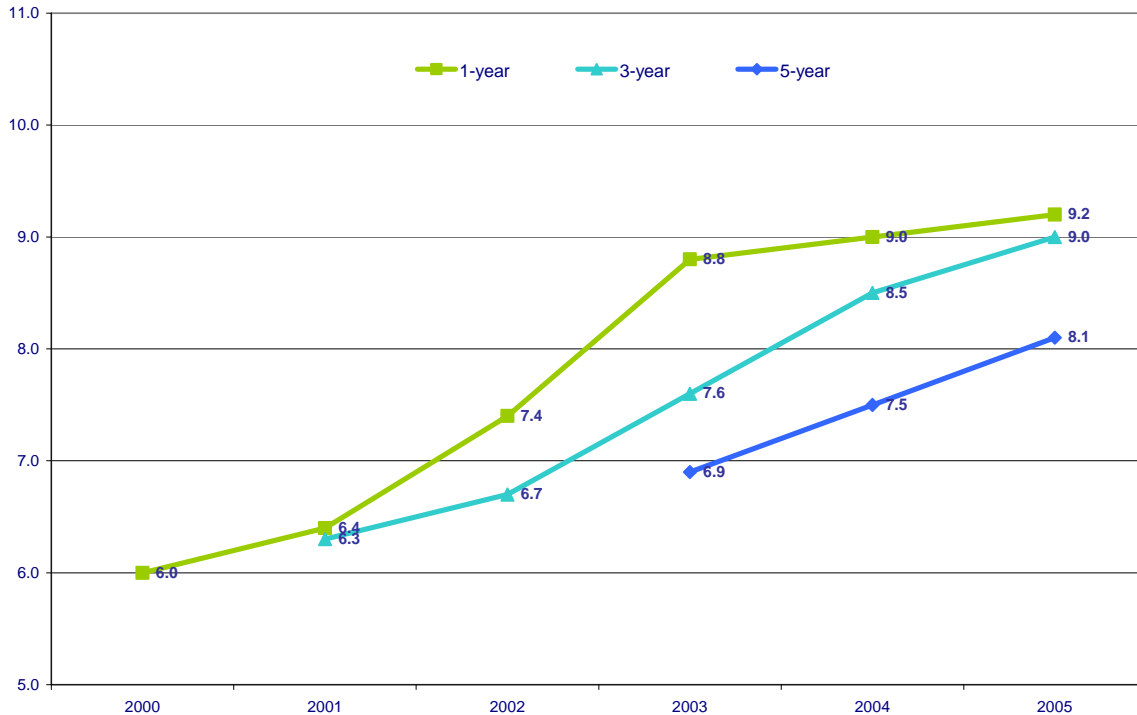
San Francisco Vacancy Rates						
	Estimate Period					
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
	1999-03	2000-04	2001-05			
ACS 1-Year	6.0	6.4	7.4	8.8	9.0	9.2
ACS 3-year	6.3	6.7	7.6	8.5	9.0	
ACS 5-year		6.9	7.5	8.1		
ACS 1-Year Upper	6.5	7.1	8.1	9.7	10.0	10.1
ACS 1-Year Point	6.0	6.4	7.4	8.8	9.0	9.2
ACS 1-Year Lower	5.5	5.7	6.7	7.9	8.0	8.3
ACS 3-Year Upper	6.6	7.1	8.1	9.0	9.4	
ACS 3-Year Point	6.3	6.7	7.6	8.5	9.0	
ACS 3-Year Lower	6.0	6.3	7.1	8.0	8.6	
ACS 5-Year Upper		7.2	7.8	8.5		
ACS 5-Year Point		6.9	7.5	8.1		
ACS 5-Year Lower		6.6	7.2	7.7		
ACS 1-Year CA	6.8	6.6	6.4	6.3	6.5	6.9

This is the range of data for San Francisco in green and comparable data for the state in yellow. The large increase in vacancy in the 1-year estimates and the increasing margin of error for San Francisco do not seem plausible given the population growth and demand for housing in the city and county. Both the population and housing unit stock have grown by about 3 percent since the 2000 census.



The 1- and 3-year ACS series, as expected, introduce smoothness to the data series but may not be deemed sufficiently current to use in the state's annual county population estimates. The differences in the three data series could fuel challenges to the state's use of one series instead of another. Vacancy status allocation rates in the 1-year estimates range from 0.7 to 4.7 percent compared to rates of 1.5 to 3.0 percent in the 3-year estimates and 2.2 to 2.5 in the 5-year series.

**San Francisco ACS Vacancy Rates (end-year alignment)**



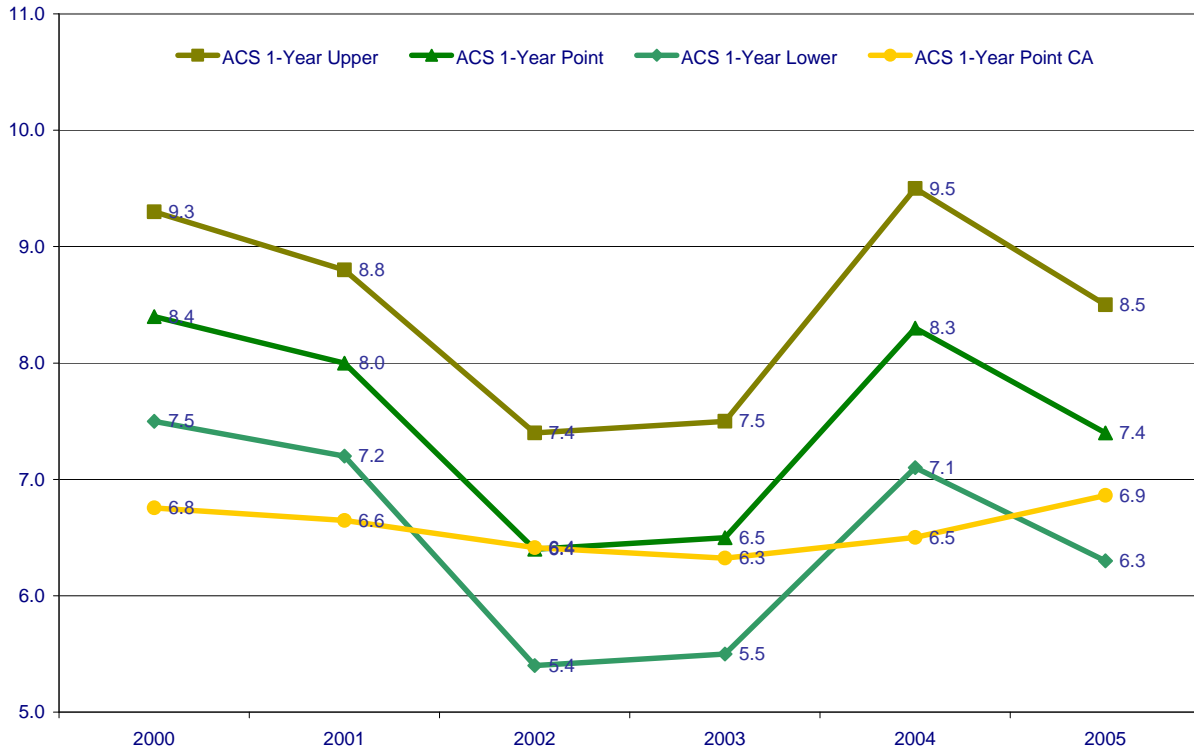
**Tulare County**

The ACS is showing vacancy status in Tulare County increasing from a range of 7.5 to 9.3 percent for the 2000 period to 6.3 to 8.5 percent for the 2005 period.

Tulare Vacancy Rates						
	Estimate Period					
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
ACS 1-Year	8.4	8.0	6.4	6.5	8.3	7.4
ACS 3-year	8.3	7.5	6.9	7.1	7.3	
ACS 5-year		7.3	7.3	7.1		
ACS 1-Year Upper	9.3	8.8	7.4	7.5	9.5	8.5
ACS 1-Year Point	8.4	8.0	6.4	6.5	8.3	7.4
ACS 1-Year Lower	7.5	7.2	5.4	5.5	7.1	6.3
ACS 3-Year Upper	8.9	8.2	7.6	7.8	7.9	
ACS 3-Year Point	8.3	7.5	6.9	7.1	7.3	
ACS 3-Year Lower	7.7	6.8	6.2	6.4	6.7	
ACS 5-Year Upper		7.7	7.7	7.6		
ACS 5-Year Point		7.3	7.3	7.1		
ACS 5-Year Lower		6.9	6.9	6.6		
ACS 1-Year CA	6.8	6.6	6.4	6.3	6.5	6.9

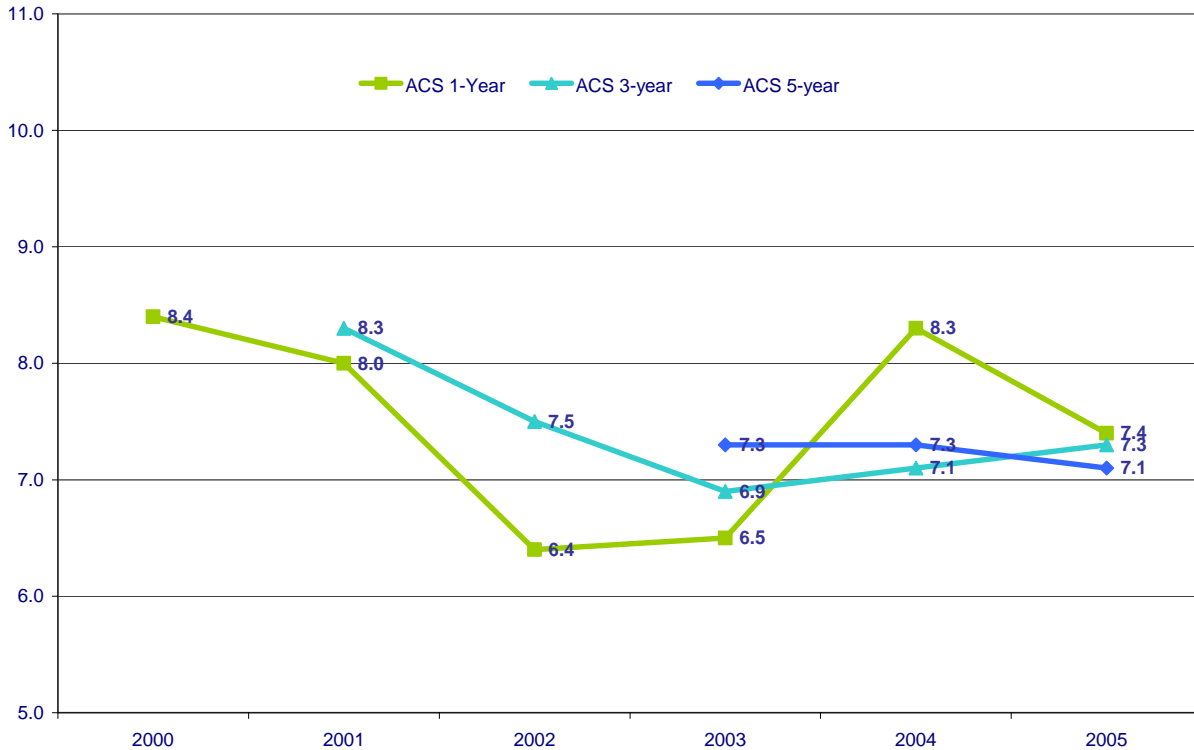
This is the range of data for Tulare County for the ACS 1-year estimates in green and comparable data for the state in yellow. Using the reported vacancy rates from the ACS 1-year estimates, without strong support from local government colleagues who were willing to accept and explain the relatively large annual changes in the vacancy rates, would compromise the credibility of persons per household estimates based on the ACS vacancy data.

**Tulare and California 1-Year Vacancy Rates**



Even aligning the 3- and 5-year estimates series on the end-year to use the most current data possible for each series may not rendered the smoother series current enough for this use. The differences in the three data series, besides inviting challenges and demands for the use of an alternative data series, are dramatic. Vacancy status allocation rates in the 1-year estimates range from 0.0 to 6.5 percent compared to rates of 0.1 to 5.2 percent in the 3-year estimates and 2.1 to 4.3 in the 5-year series.

**Tulare ACS Vacancy Rates (end-year alignment)**



## Multiyear Estimates Study Research Questions

The Census Bureau posed some specific research questions as part of the Multi-Year Estimates Evaluations Project. There are no simple answers given the profusion of the data, the diversity of data users, and the multiplicity of applications.

1. Will 5-year ACS estimates achieve acceptable levels of reliability for the small areas they are designed to describe?  
 The ACS data at the block group and census tract level will probably not be reliable. Aggregation to higher levels of geography will improve the reliability. The specific variable, geography, use and user will be major factors in the value of these data for small areas.
2. What are typical variance characteristics for small sub-county areas and small population groups?  
 The variance typically exceeds or approximates the ACS estimates reducing confidence in the estimate and limiting the usefulness of the data for many applications.
3. Will the low levels of unit and item nonresponse and high levels of coverage found in 1-year estimates continue for small areas described by 3-year and 5-year estimates?  
 Lower levels of unit and item nonresponse in the ACS 1-year estimates, compared to the decennial census, appear to continue for the multi-year estimates.
4. How stable are the 3-year and 5-year estimates in measuring change over time in the characteristics of the population and housing?  
 The multi-year estimates are more stable than the ACS 1-year estimates. The perception of whether the stability is acceptable will depend on the variable, geographic area and use.

5. How do the distributions of 1-year, 3-year, and 5-year estimates compare for a common area?

The distributions of the 1-year ACS estimates are often quite erratic, the 3-year estimates appear more stable but may still appear irregular for some variables, and the 5-year estimates are typically the smoothest.

6. How reasonable are 5-year estimates? Will data users be able to use them to make important policy decisions?

The use of 5-year estimates for policy decisions is entirely dependent on the variable, geography, application, and user.

7. What guidance should be given to users on when to use 1-year, 3-year, or 5-year estimates when all 3 sets are available?

The 5-year ACS estimates are available for all areas and geographies. They represent the greatest sample size and stability and offer data more frequently than the decennial census long-form data; however, pooling data over sixty months limits the currency of the data and obscures any underlying trends. ACS 3-year estimates are available for many but not all areas. Pooling data over thirty-six months results introduces some stability in the estimates while introducing a more modest lag in the data series. Caution should be used in trying to compare adjacent multi-year estimated that may not represent real change since the samples are not independent. The 1-year ACS data are available for a limited number of jurisdictions but are the most current series and annual data can be directly compared; however, data trends for some variables may appear quite aberrant even at a county level or state level.

Which series to use will depend on the geographic area, the need to compare geographic areas of different population sizes, and the sensitivity of an application to abrupt annual changes in the data series.

8. What are the best approaches for displaying multi-year estimates and clearly communicating what they are?

It is helpful for users to see a time series of each available annual and multi-year ACS estimates series to visualize the differences, trends, and stability of the data. The availability and interpretation of quality measures should be highlighted. The display of ACS data and the first data set presented to data users is very important since it is likely to be the most frequently used.

## **Continuing Issues for the ACS**

These are continuing issues with the successful evolution of the ACS that the Census Bureau is well aware of but they are worth mentioning: evaluation of the recent addition of the group quarters population data to the ACS; improvement of the Bureau's intercensal population and housing estimates used as controls for the ACS; maintenance of sufficient sample size for the survey; assistance to data users in understanding, interpreting, and using the ACS; and continued development of effective and efficient ACS data dissemination.

## **Recommendations to ACS Data Users and the U.S. Census Bureau**

### **ACS Data Users**

First, use the data and assess its face validity, does it make sense? Are there any other ACS variables or other data sources that can be used to validate or corroborate your interpretation of the ACS data? Second, be very cautious about using a single data point out of context, look at the data series and assess how stable that variable is over time and whether fluctuations are

reasonable. If an annual or 3-year average estimate fluctuates significantly consider using an estimate with a longer time frame. Look at the margin of error to assess how much confidence you have in the point estimate. Also, look behind the data by assessing the quality measures that are provided for the ACS data. Was there a notable change in the sample size in the year you are using? Were the coverage rates stable in the time period you're assessing or were there changes in the coverage rates that could have an impact on your analysis? Was there a dramatic change in response rates that could affect data quality? Was the item allocation rate for the variable under study less than 2 percent or greater than 22 percent? The Census Bureau provides the confidence intervals and quality measures along with the data so users can make informed decisions about the quality and stability of the estimates. And finally, realize that the American Community Survey holds great promise and is in a formative stage. The Census Bureau continues to improve the ACS based on the collective experience we have with the survey. It remains important to communicate successful uses of the ACS data, raise any questions that arise, and provide suggestions for data products.

It is important to begin, as early as possible, to assess the data for the geographies and variables that you use regularly to develop an understanding of the various ACS data available. There will be no comparable detailed population or housing characteristics data collected in the 2010 decennial census to benchmark or control the ACS data series beyond the basic "short form" data.

### **U.S. Census Bureau**

The Census Bureau has successfully fielded an innovative survey that will provide detailed data about the characteristics of the residents of the United States and Puerto Rico at small levels of geography. Maintaining a successful program of continuous measurement requires a program of continuous research and evaluation and continuous dialogue with primary stakeholders and data users to maintain the accuracy, accessibility, and usefulness of the data.

- Institute continued internal and independent research, evaluation, and dialogue about the ACS content, methods, data collection, use, and products. In addition to staff research, it is critical to have on-going independent evaluation of the ACS methods by the National Academy of Sciences; independent research addressing issues of the effects of survey controls, examination of unweighted and weighted survey results, and effects of the fractional sample subject to non-response follow-up on data quality and stability; and regular discussion of the most effective ways to present ACS data to the public, policy-makers, and researchers. As ACS data will soon be available for all communities it is necessary to expand efforts to educate new and future users of the ACS.
- Design ACS data products that will allow users to easily access the multi-year estimates for their jurisdiction of interest. Many more data users are interested in "everything" about their community than about "everything" about what was collected in 2003-2005. Be especially careful of releasing the less reliable ACS 1-year estimates in advance of the more reliable, more universal, 3- and 5-year estimates. It would be preferable to release all series together along with definitions, usage guidance, and "statistical calculators" that can assist data users in interpreting the available data.
- Enhance the availability of quality measures by expanding them to sub-state areas and adding reports of response by mode.
- Evaluate the adequacy of the annual sample size of 3 million housing units during full implementation of the ACS. This sample size has not increased since the early planning stages of the survey. The housing stock in the United States grew by 13.6 million housing units between the 1990 and 2000 censuses. Midway between the 2000 and 2010 censuses, the housing stock increased by 8.6 million units, on pace to exceed the



- Address the issues of providing useful data for large geographic areas such as Chicago, New York, or Los Angeles that receive annual ACS data for the large jurisdiction but no sub-city, census tract/block group data until 5-year aggregations.
- Provide guidance, if only descriptive rationales, to data users to help them decide when and whether to compare multiple multi-year estimates by aligning the mid- or end-year points in the series.

## **Conclusions**

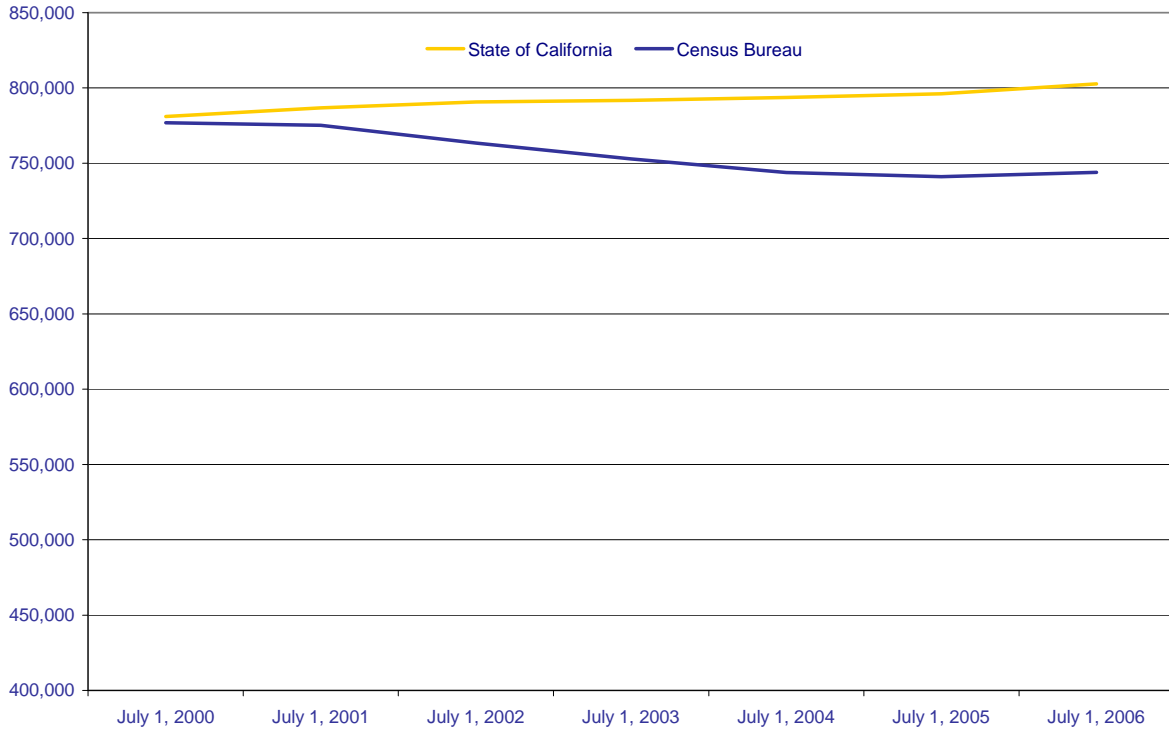
Census data users are accustomed to use a single data set every ten year and to see linear comparisons between censuses. There has traditionally been little or no use of available quality measures to evaluate the decennial census. The strength of the ACS is the wealth multiple annual data sets. Our challenge is to assess these multiple data sets and the quality measures which we're less familiar with to use those data effectively. There is a serious hope that the ACS will accurately portray the size, location, and characteristics of the population of California and that selected ACS variables such as vacancy rates, persons per household, and the question on residence one year ago can be used in the future to inform and improve the State of California's population estimates.

The views expressed are those of the author who appreciates the development of the multi-year estimates data base and the expertise and assistance of Census Bureau staff Susan Schechter, Deborah Griffin, Alfredo Navarro, Anthony Tersine, Douglas Hillmer, Mark Asiala, Gregory Robinson, Michael Beaghen, and Michael Starsinic. Special thanks to Cynthia Davis Hollingsworth at the Census Bureau for leading the Multi-Year Estimates Evaluations Project with grace and good humor and to my colleague Cynthia Singer for creating the maps included in the paper.

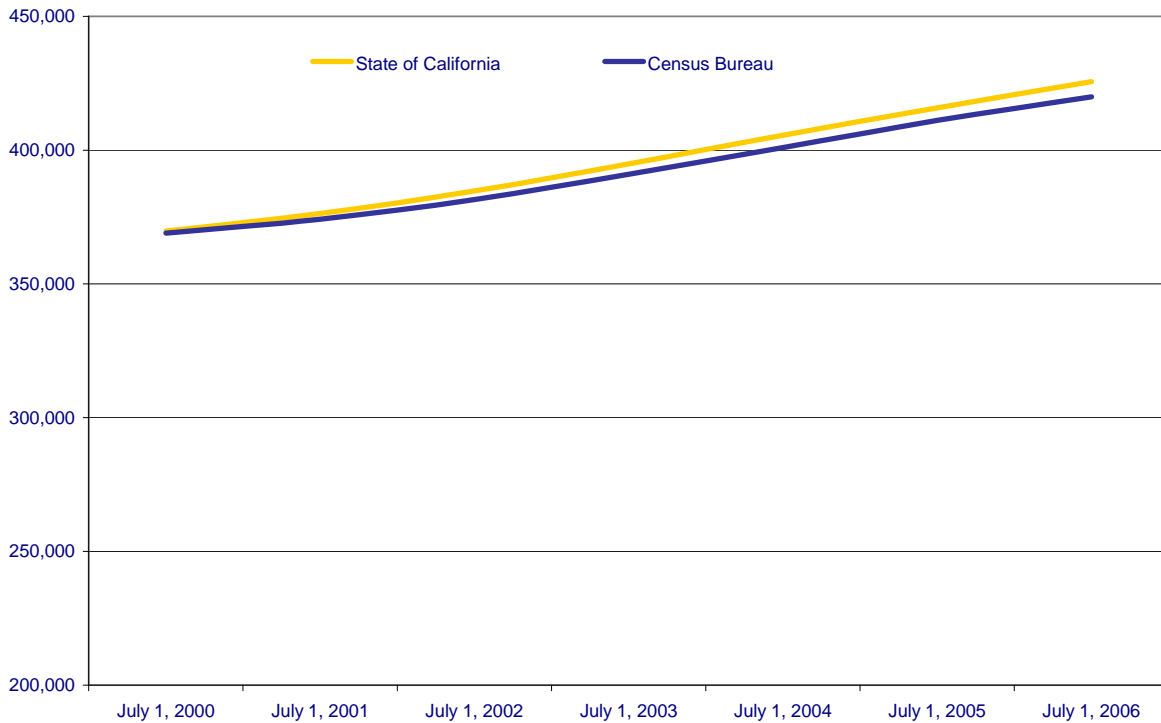
## Appendix

# ACS Population Controls

## San Francisco County Population Estimates



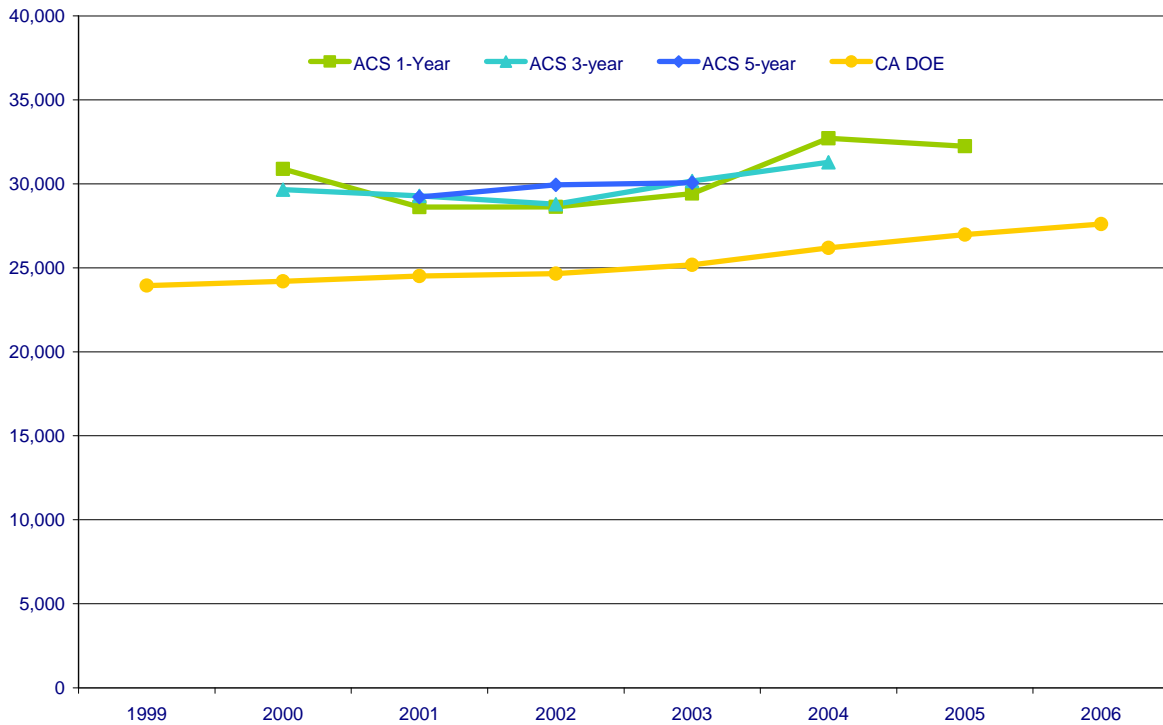
## Tulare County Population Estimates



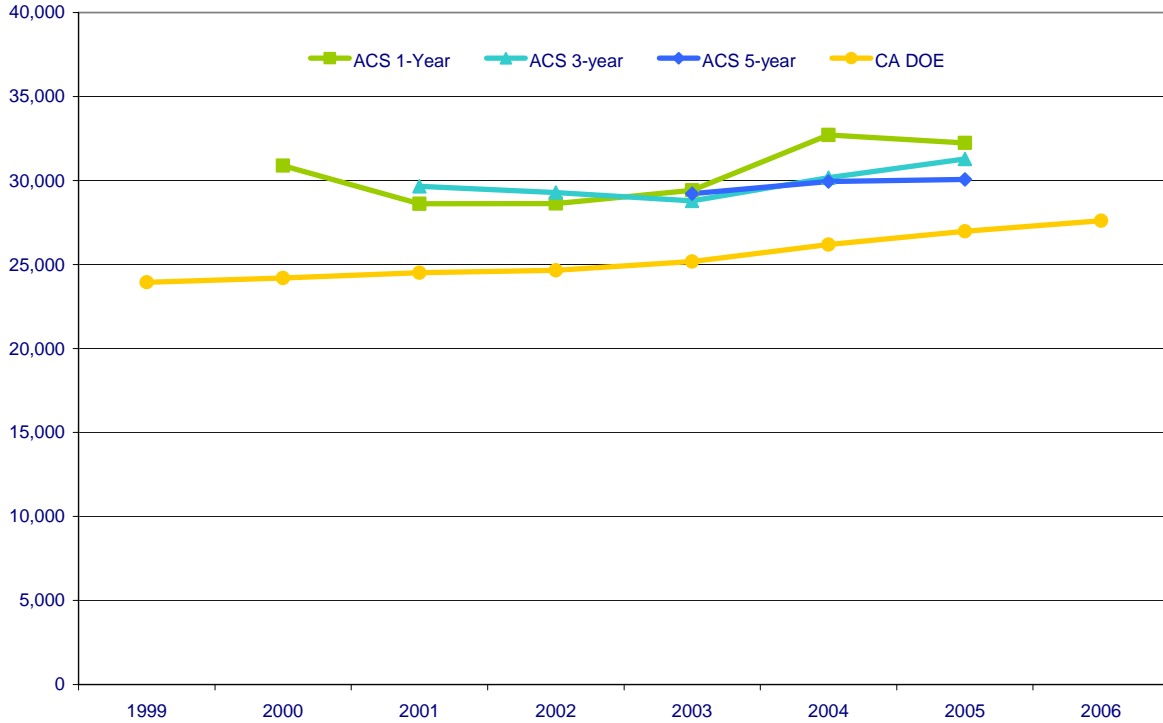
## Enrollment Comparisons

Tulare County High School Enrollment										
	Estimate Period									
	1999	2000	2001	2002	2003	2004	2005			2006
		1999-01	2000-02	2001-03	2002-04	2003-05				
		1999-03	2000-04	2001-05						
ACS 1-Year		30,889	28,618	28,629	29,424	32,720	32,236			
ACS 3-year		29,650	29,294	28,793	30,161	31,286				
ACS 5-year			29,218	29,942	30,060					
ACS 1-Year Upper		32,192	29,942	30,424	31,023	34,899	34,267			
ACS 1-Year Point		30,889	28,618	28,629	29,424	32,720	32,236			
ACS 1-Year Lower		29,586	27,294	26,834	27,825	30,541	30,205			
ACS 3-Year Upper		30,433	30,255	29,569	31,318	32,230				
ACS 3-Year Point		28,867	28,333	28,017	29,004	30,342				
ACS 3-Year Lower		29,650	29,294	28,793	30,161	31,286				
ACS 5-Year Upper			29,845	30,730	30,810					
ACS 5-Year Point			29,218	29,942	30,060					
ACS 5-Year Lower			28,591	29,154	29,310					
CA DOE	23,941	24,197	24,515	24,658	25,185	26,195	26,976	27,613		

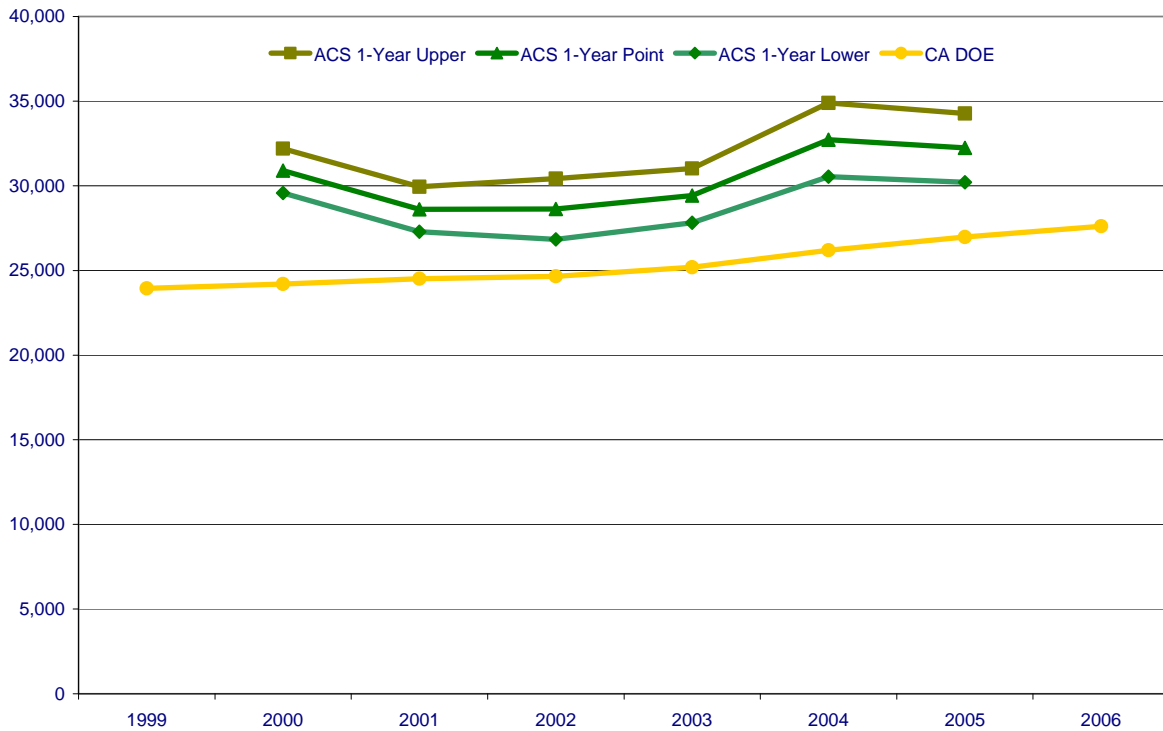
**Tulare County High School Enrollments (mid-year alignment)**



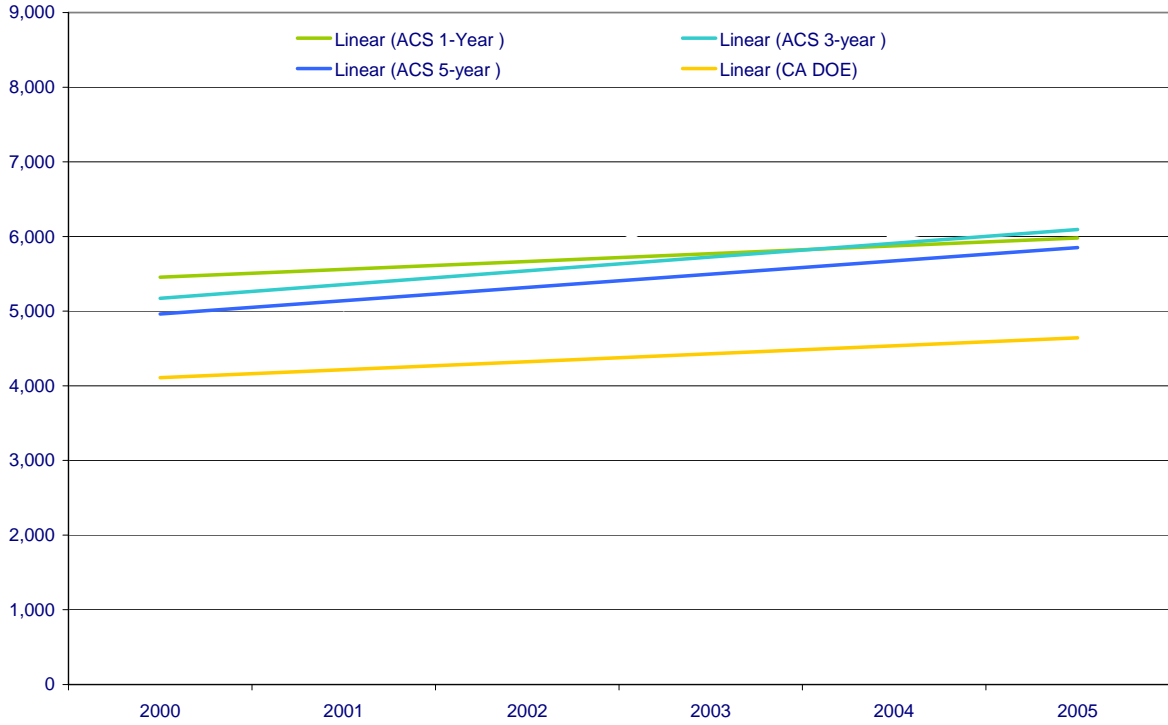
### Tulare County High School Enrollments (end-year alignment)



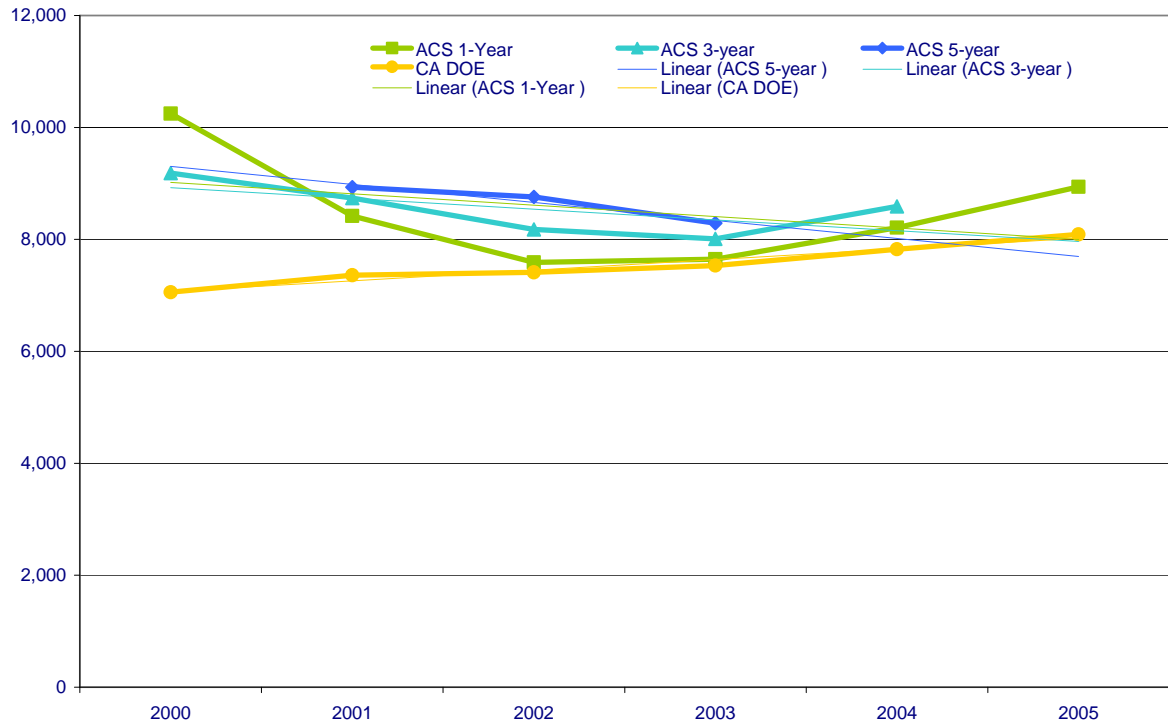
### Tulare County 1-Year Enrollment



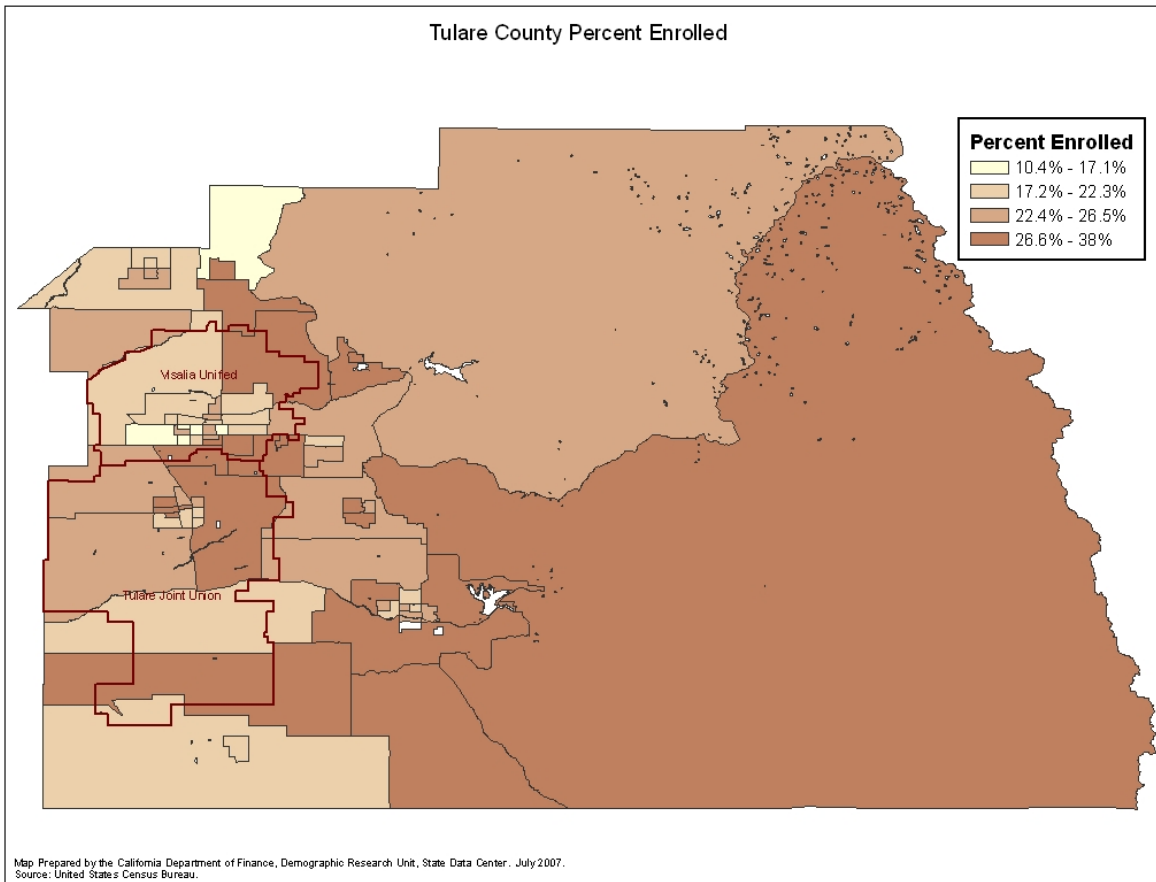
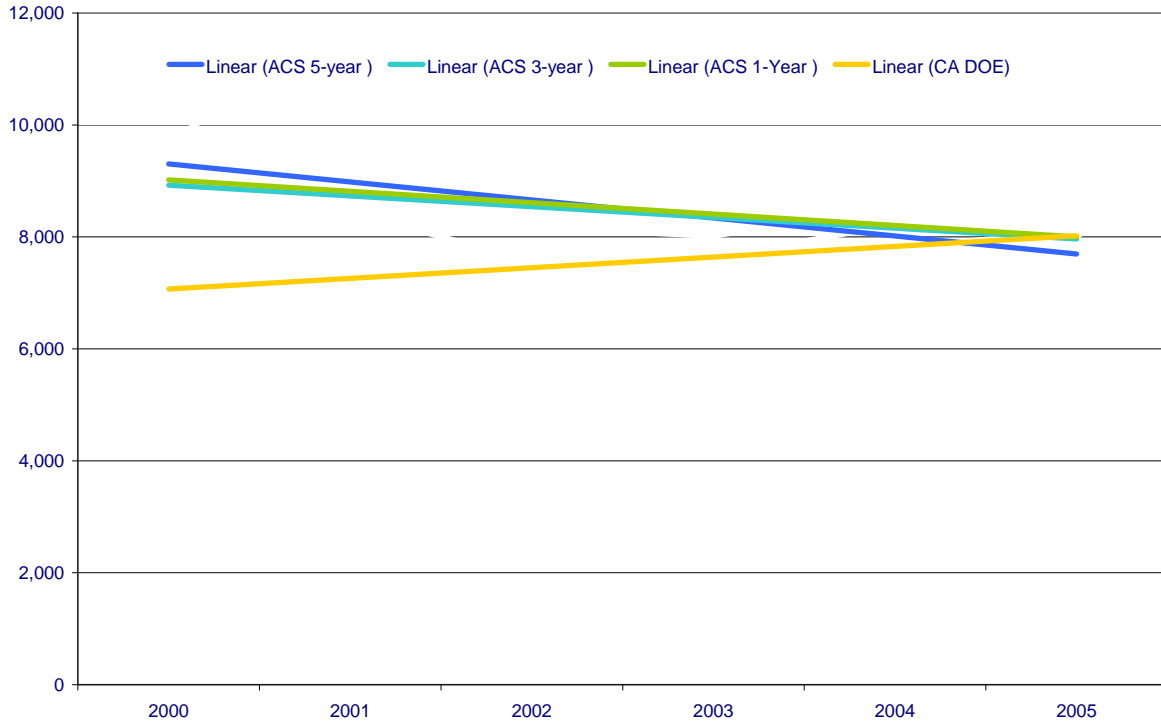
### Tulare Joint Union High School ACS Series Trends



### Visalia Unified School District ACS Enrollment Trends



### Visalia Unified School District ACS Trends



## Quality Measures

<b>Sample Size</b>						
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Tulare County</b>						
1-yr.	6,339	5,858	2,818	3,433	3,453	3,407
3-yr.	17,926	15,015	12,115	9,704	10,293	
5-yr.		24,202	21,926	18,975		
HU	119,639	121,487	123,151	124,970	126,792	129,128
<b>San Francisco County</b>						
1-yr.	10,801	8,652	7,324	8,553	7,312	6,624
3-yr.	29,729	26,774	24,527	23,190	22,489	
5-yr.		45,602	42,643	38,466		

<b>Tulare Joint High School District</b>						
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Sample Size</b>						
1-yr.	NA	1,022	492	660	627	664
3-yr.	3,257	2,657	2,172	1,779	1,951	
5-yr.		4,411	3,945	3,463		
<b>Final Interviews</b>						
1-yr.	NA	628	271	422	392	426
3-yr.	2,024	1,586	1,321	1,085	1,240	
5-yr.		2,715	2,399	2,139		

<b>Visalia Unified School District</b>						
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
<b>Sample Size</b>						
1-yr.	1,722	1,581	891	899	920	890
3-yr.	4,803	4,205	3,380	2,713	2,711	
5-yr.		6,613	6,032	5,191		
<b>Final Interviews</b>						
1-yr.	1,164	1,070	541	589	631	619
3-yr.	3,287	2,784	2,201	1,763	1,841	
5-yr.		4,424	4,005	3,453		



ACS Coverage Rates						
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
<b>Tulare</b>						
1-yr.	96.5	89.4	92.5	92.5	89.3	91.3
3-yr.	90.9	92.6	91.4	90.8	90.5	
5-yr.		91.5	91.5	89.5		
<b>San Francisco</b>						
1-yr.	96.3	95.5	92.3	90.5	94.8	93.5
3-yr.	94.5	94.4	92.4	91.8	92.2	
5-yr.		93.0	93.3	92.8		

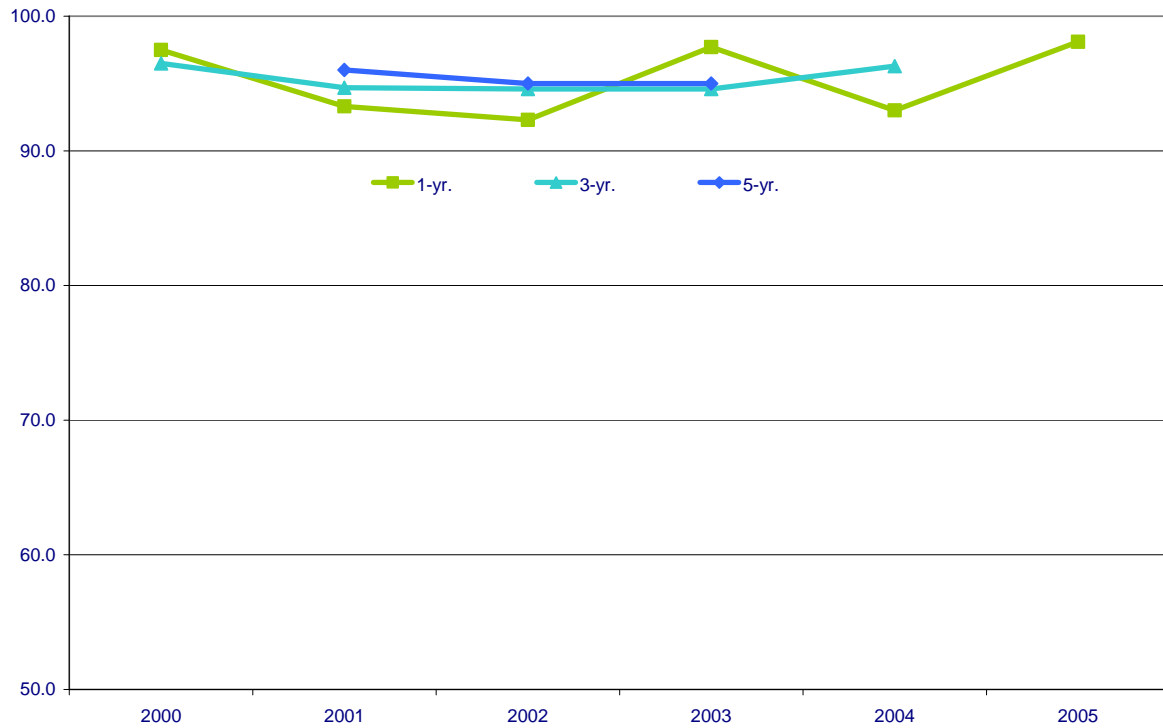
Tulare County ACS Coverage Rates



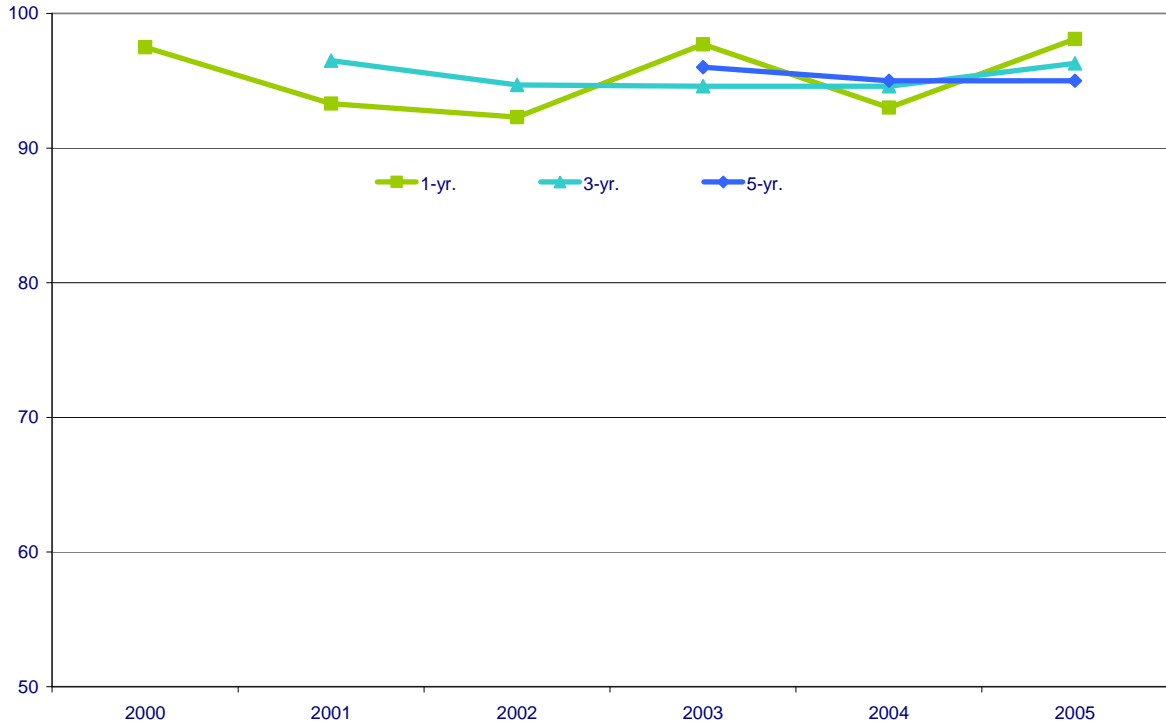
ACS Response Rates						
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
<b>Tulare</b>						
1-yr.	97.5	93.3	92.3	97.7	93.0	98.1
3-yr.	96.5	94.7	94.6	94.6	96.3	
5-yr.		96.0	95.0	95.0		
<b>San Francisco</b>						
1-yr.	94.3	94.0	91.7	95.0	91.2	95.5
3-yr.	94.1	93.6	93.7	92.8	93.9	
5-yr.		93.9	93.4	93.6		

ACS Non-Response Rates for California Counties						
	2000	2001	2002	2003	2004	2005
	1999-01	2000-02	2001-03	2002-04	2003-05	
		1999-03	2000-04	2001-05		
<b>Tulare</b>						
1-yr.	2.5	6.7	7.7	2.3	7.0	1.9
3-yr.	3.5	5.3	5.4	5.4	3.7	
5-yr.		4.0	5.0	5.0		
<b>San Francisco</b>						
1-yr.	5.7	6.0	8.3	5.0	8.8	4.5
3-yr.	5.9	6.4	6.3	7.2	6.1	
5-yr.		6.1	6.6	6.4		

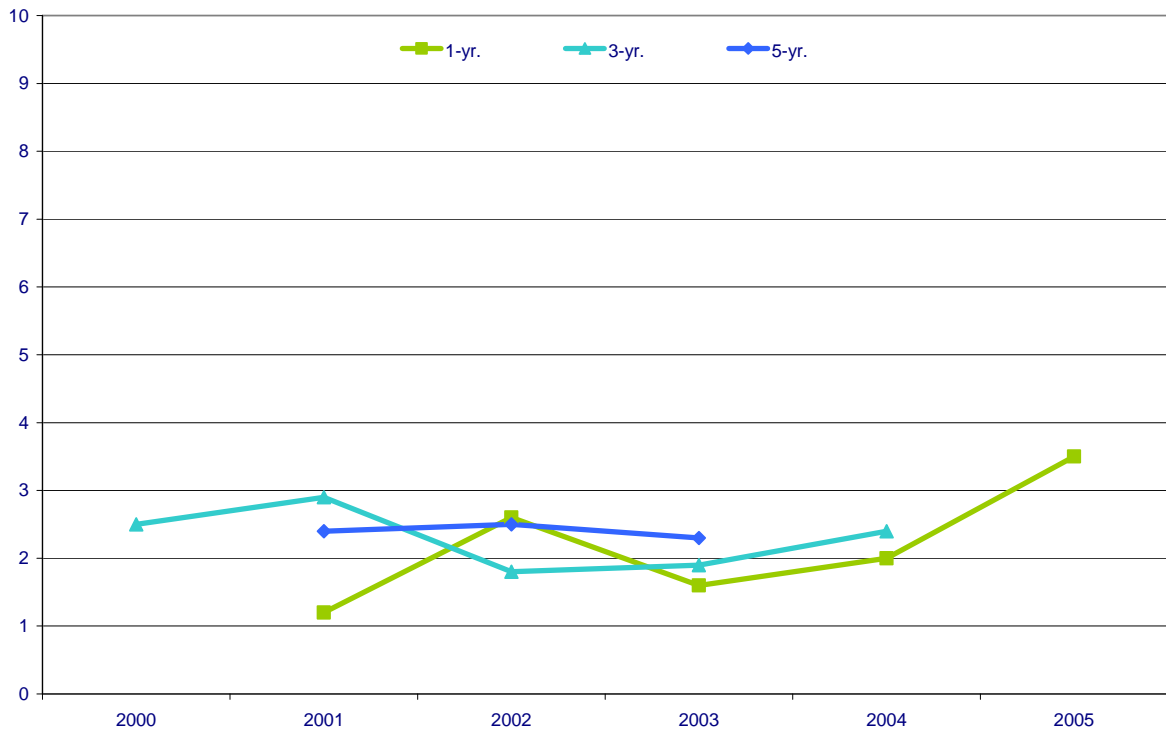
Tulare County ACS Response Rates (mid-year alignment)



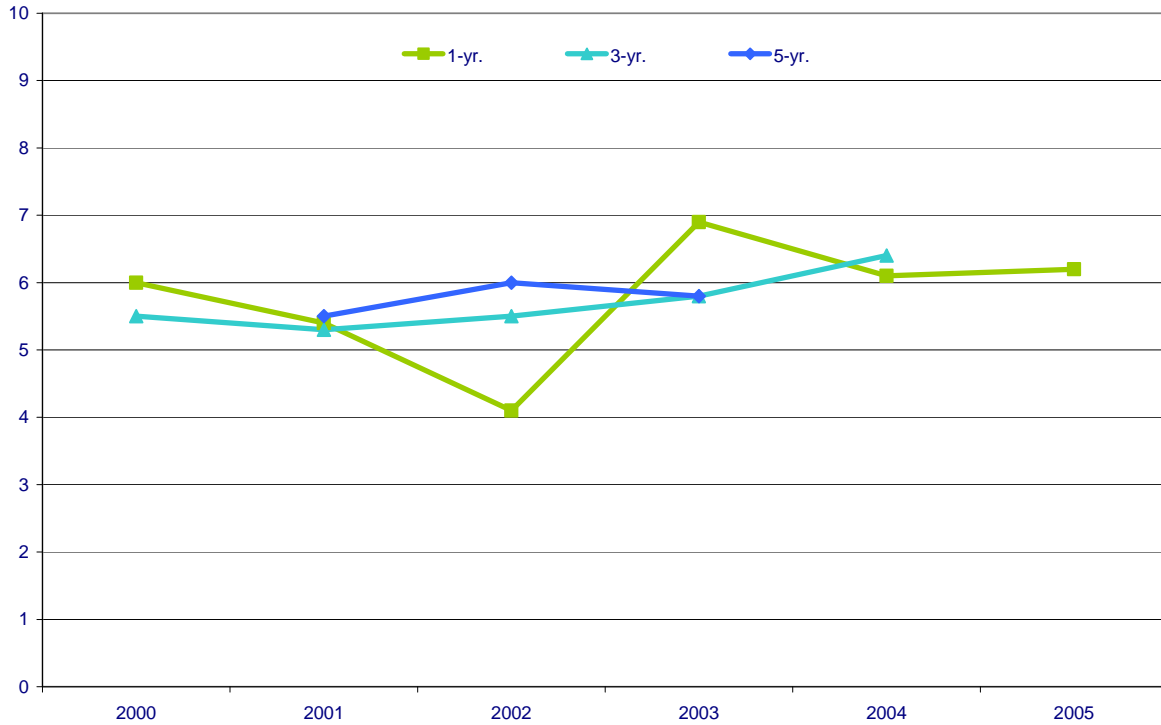
Tulare County ACS Response Rates (end-year alignment)



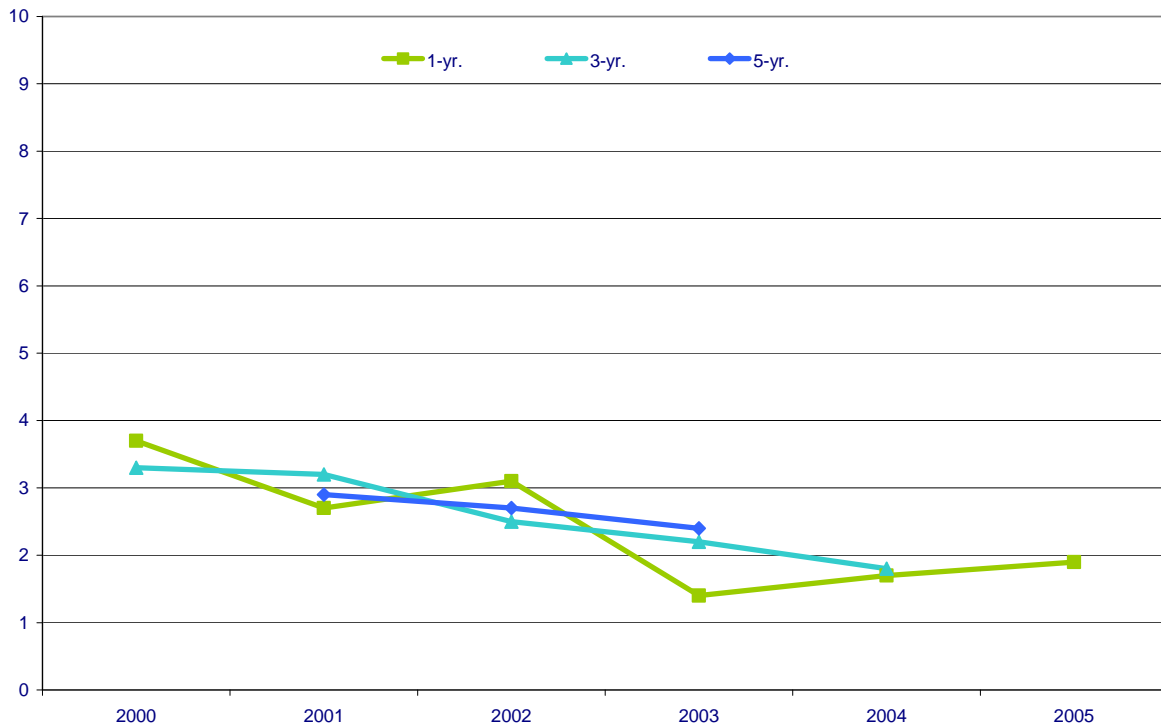
Tulare Joint Union High School District ACS School Enrollment Allocation Rates



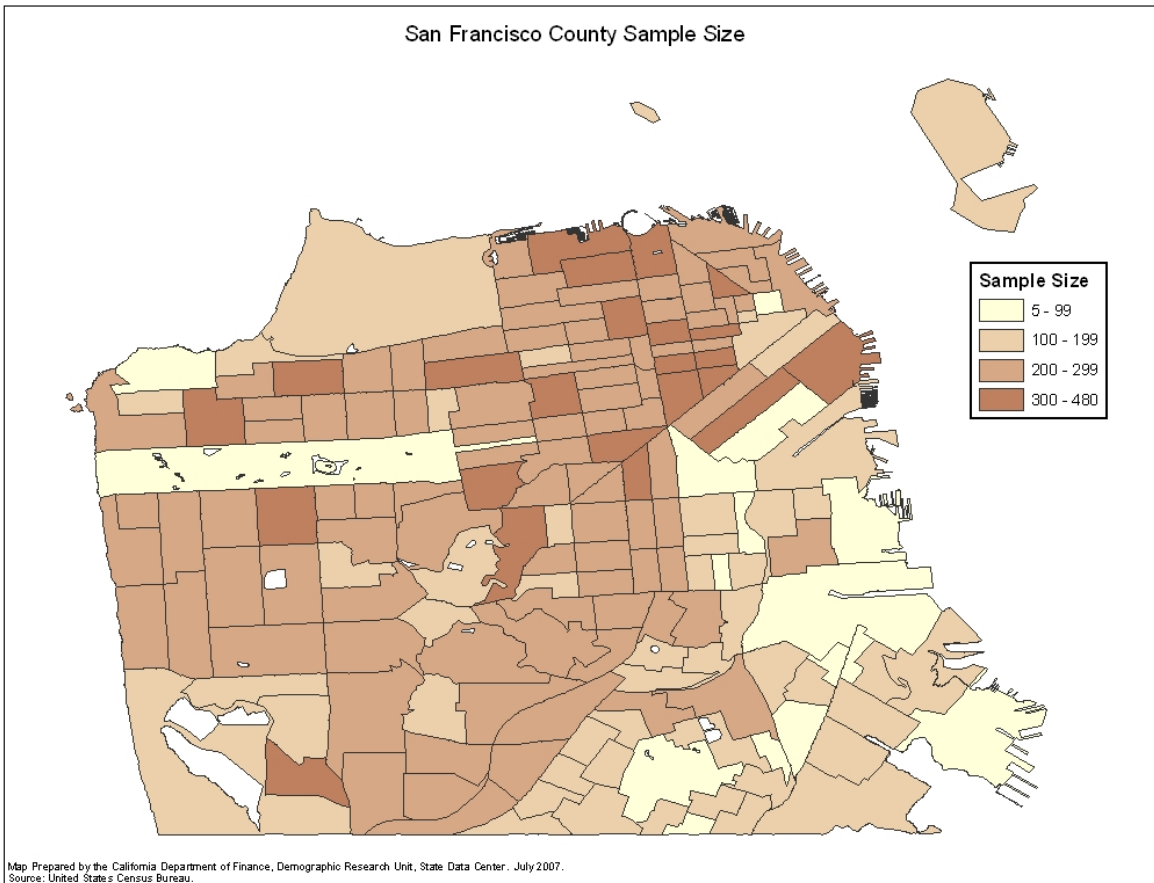
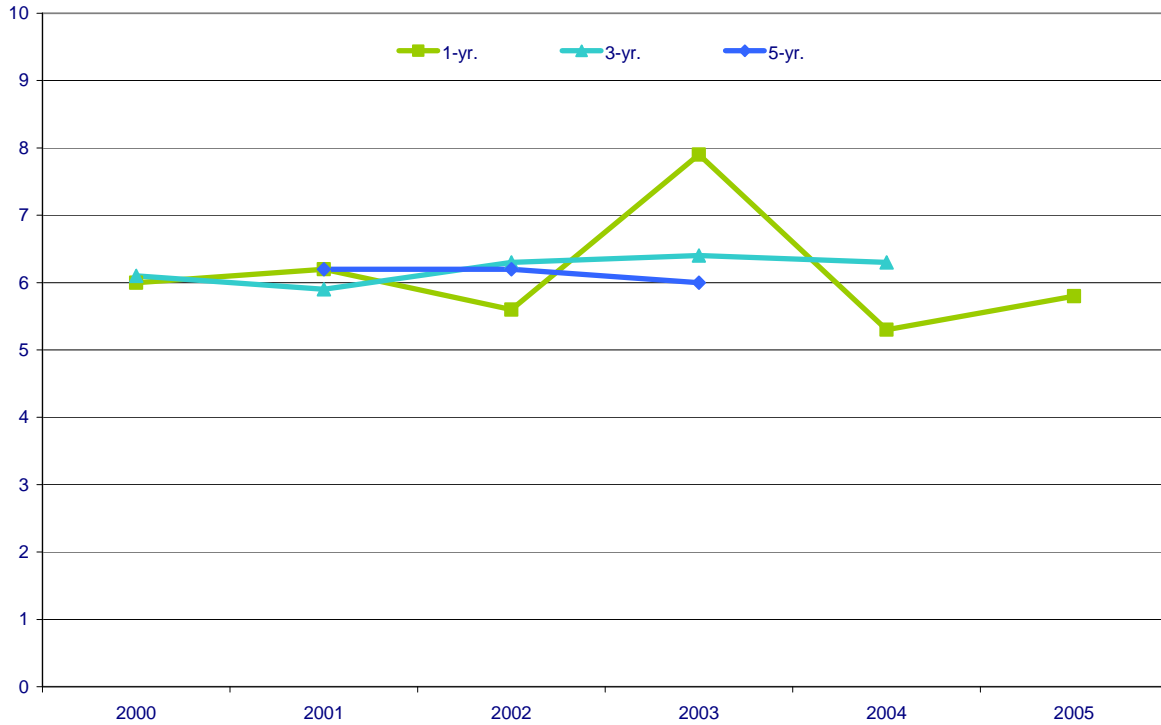
### Tulare County ACS Grade Level Attending Allocation Rates



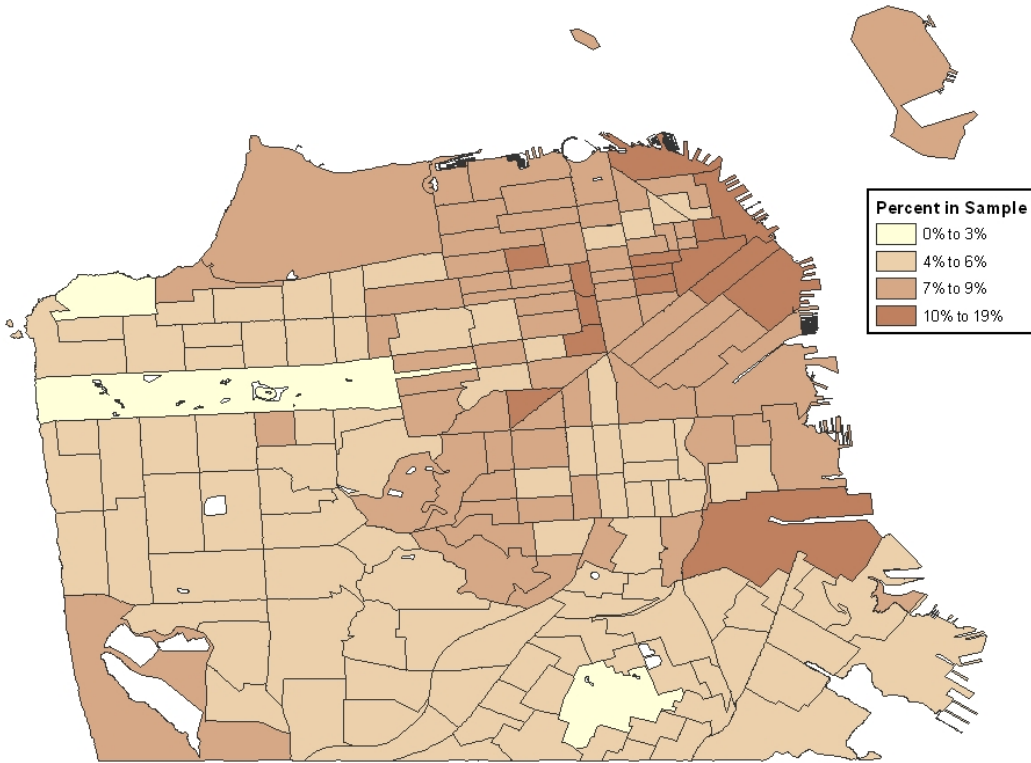
### Visalia Unified School District ACS Enrollment Allocation Rates



### Visalia Unified School District ACS Grade Level Attending Allocation Rates

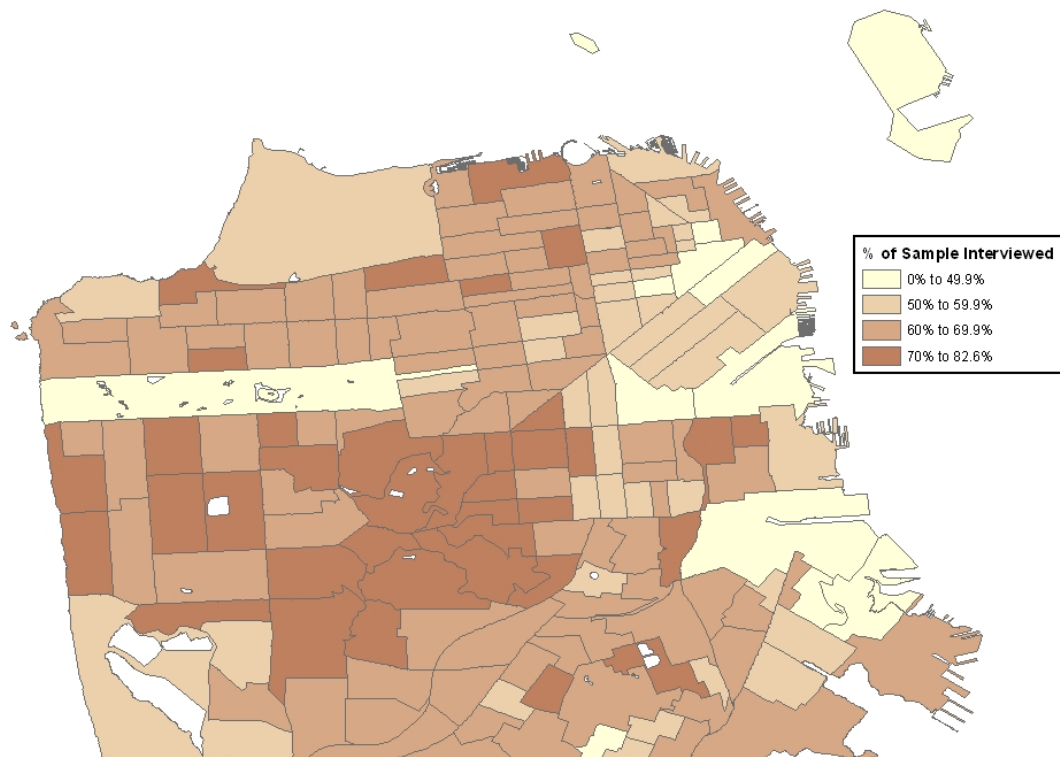


### San Francisco County Sample Size



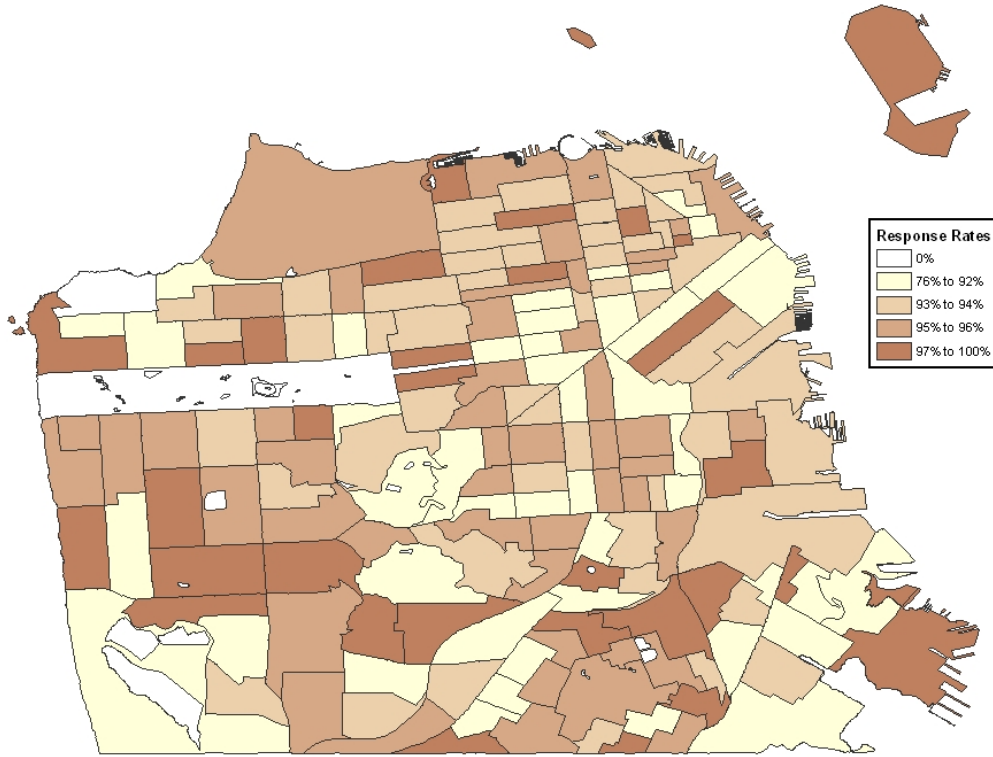
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center. July 2007.  
Source: United States Census Bureau.

### San Francisco County Percent of Sample Interviewed



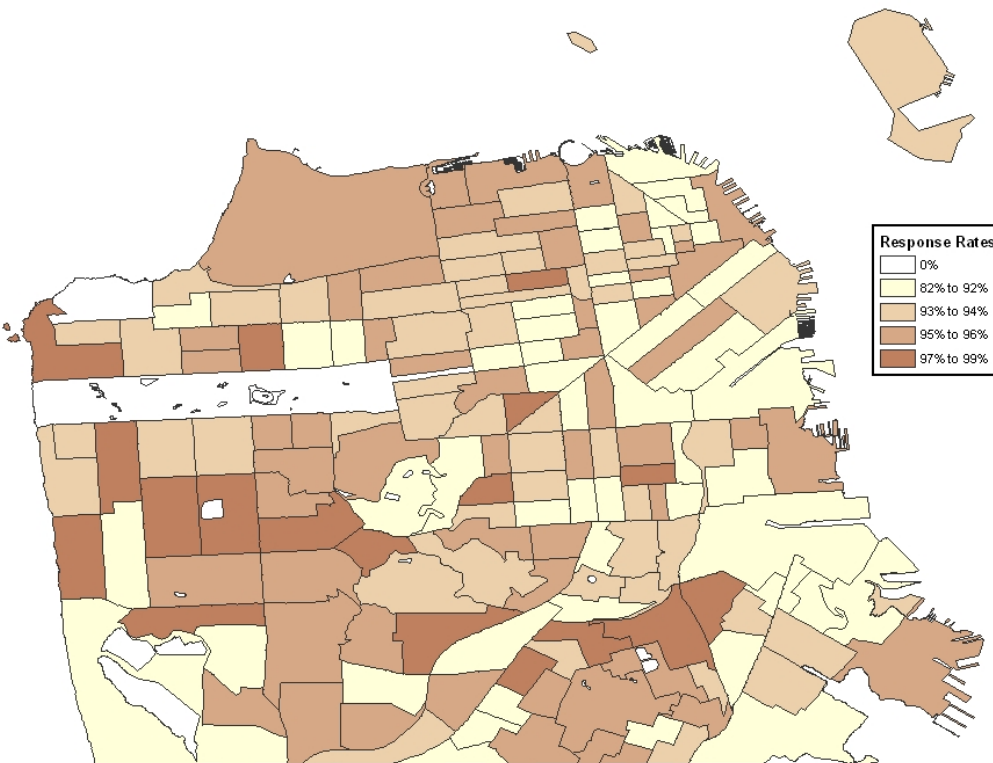
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center. July 2007.  
Source: United States Census Bureau.

### San Francisco County Response Rates 1999 - 2003



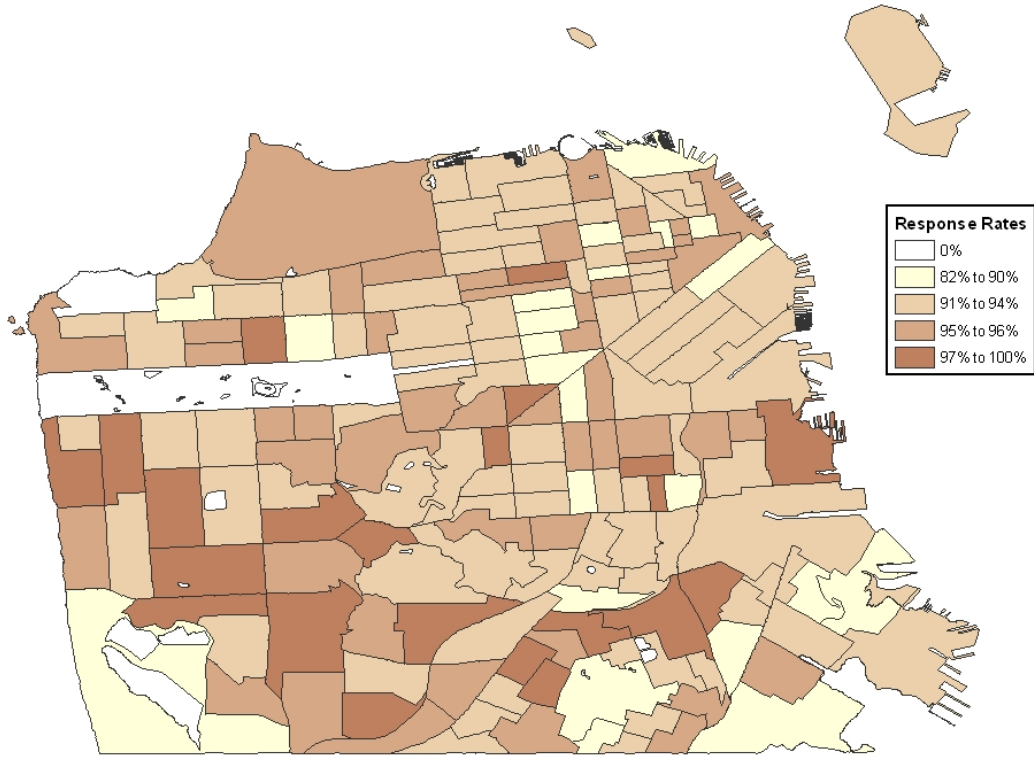
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center, July 2007.  
Source: United States Census Bureau.

### San Francisco County Response Rates 2000 - 2004



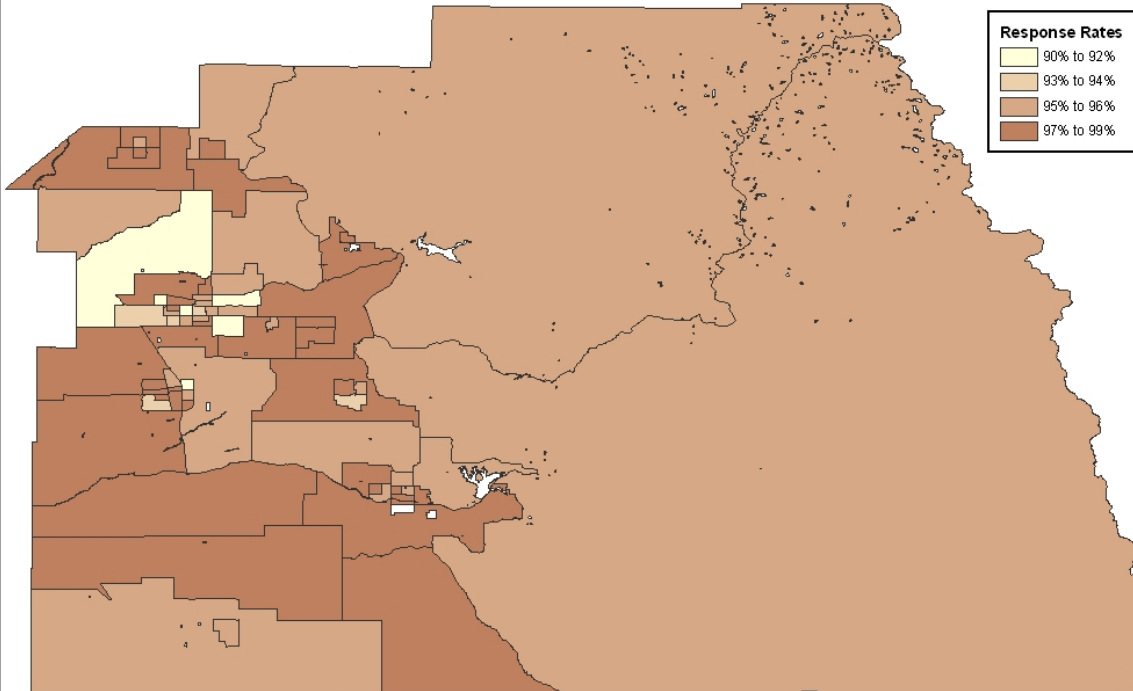
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center, July 2007.  
Source: United States Census Bureau.

San Francisco County Response Rates 2001 - 2005



Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center, July 2007.  
Source: United States Census Bureau.

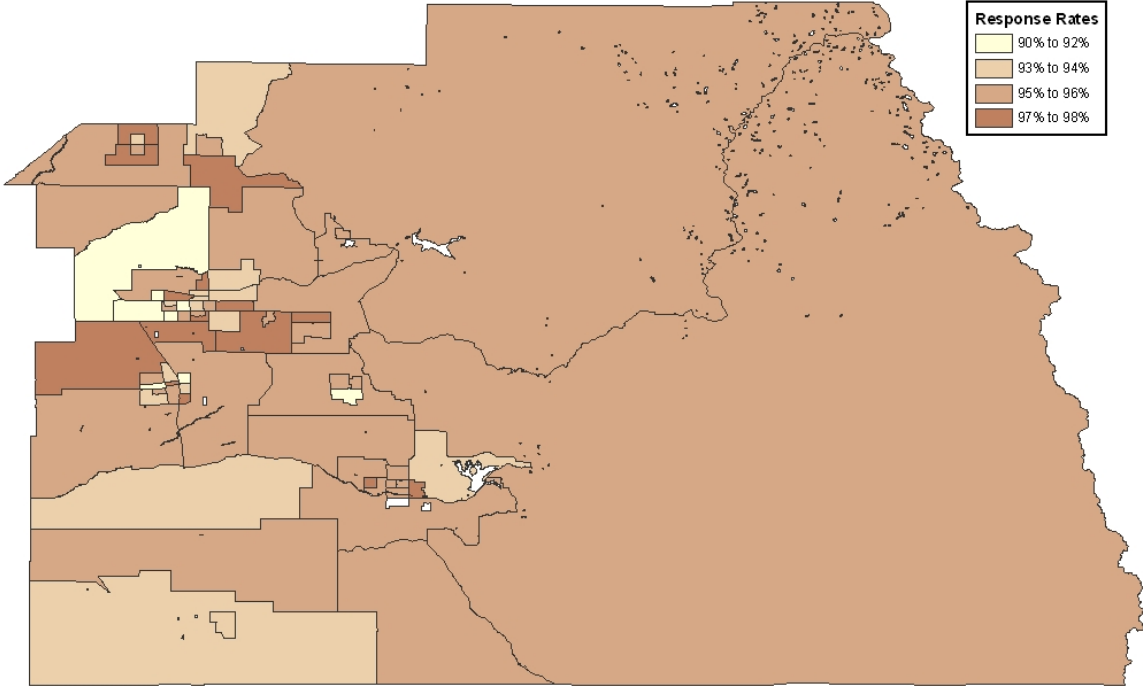
Tulare County Response Rates 1999 - 2003



Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center, July 2007.  
Source: United States Census Bureau.

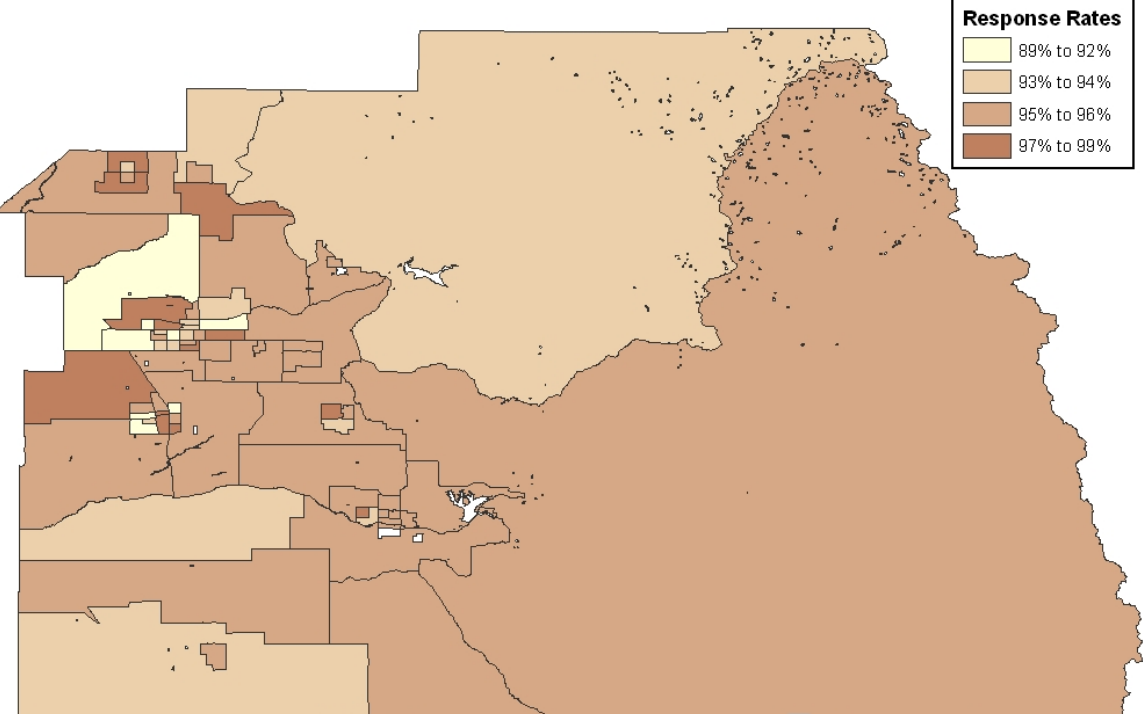


Tulare County Response Rates 2000 - 2004



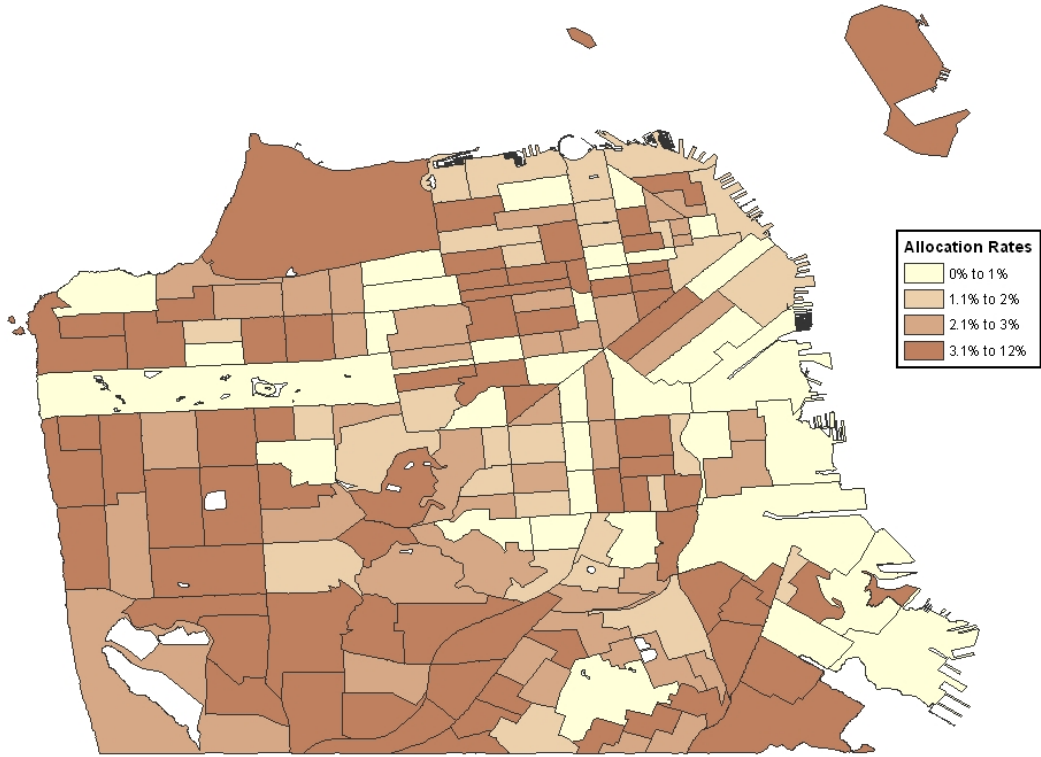
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center. July 2007.  
Source: United States Census Bureau.

Tulare County Response Rates 2001 - 2005



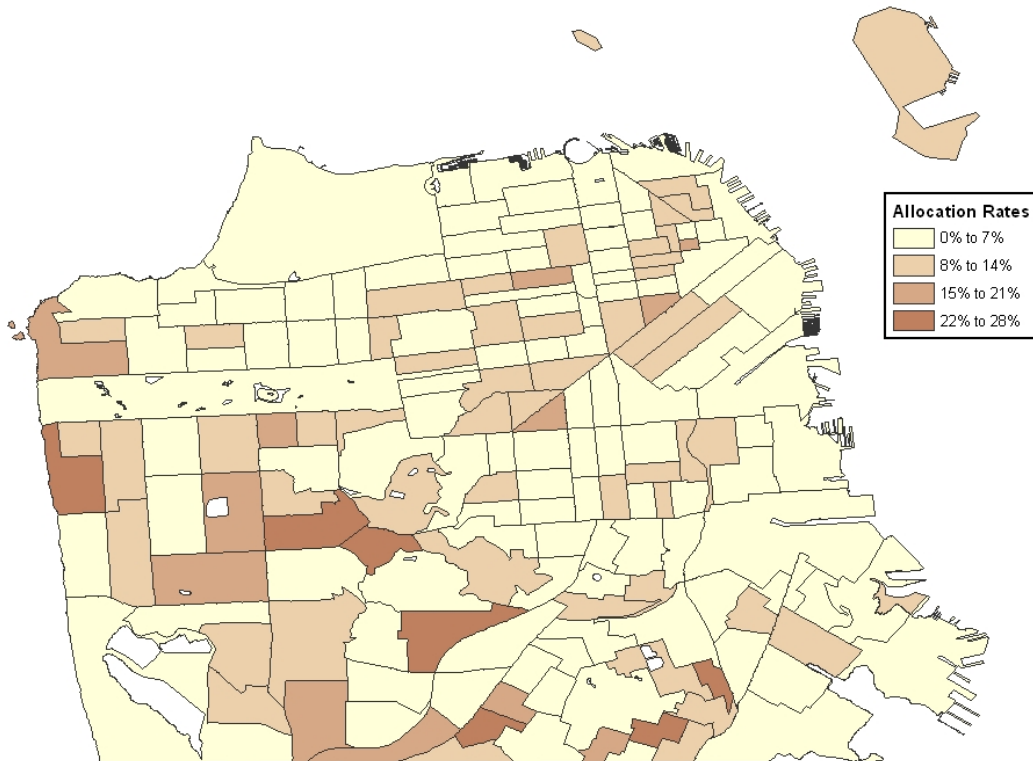
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center. July 2007.  
Source: United States Census Bureau.

### San Francisco County School Enrollment Allocation Rates



Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center. July 2007.  
Source: United States Census Bureau.

### San Francisco County Residence Abroad One Year Ago Allocation Rates

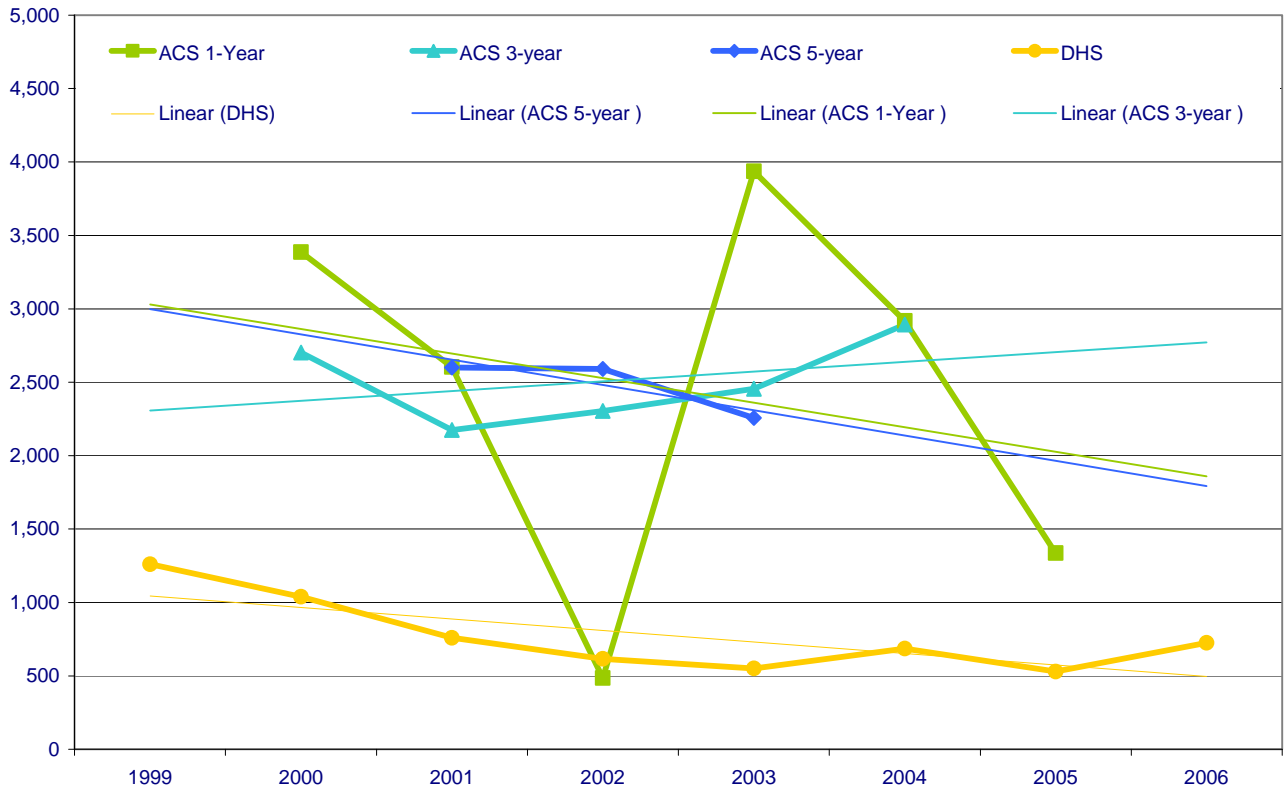


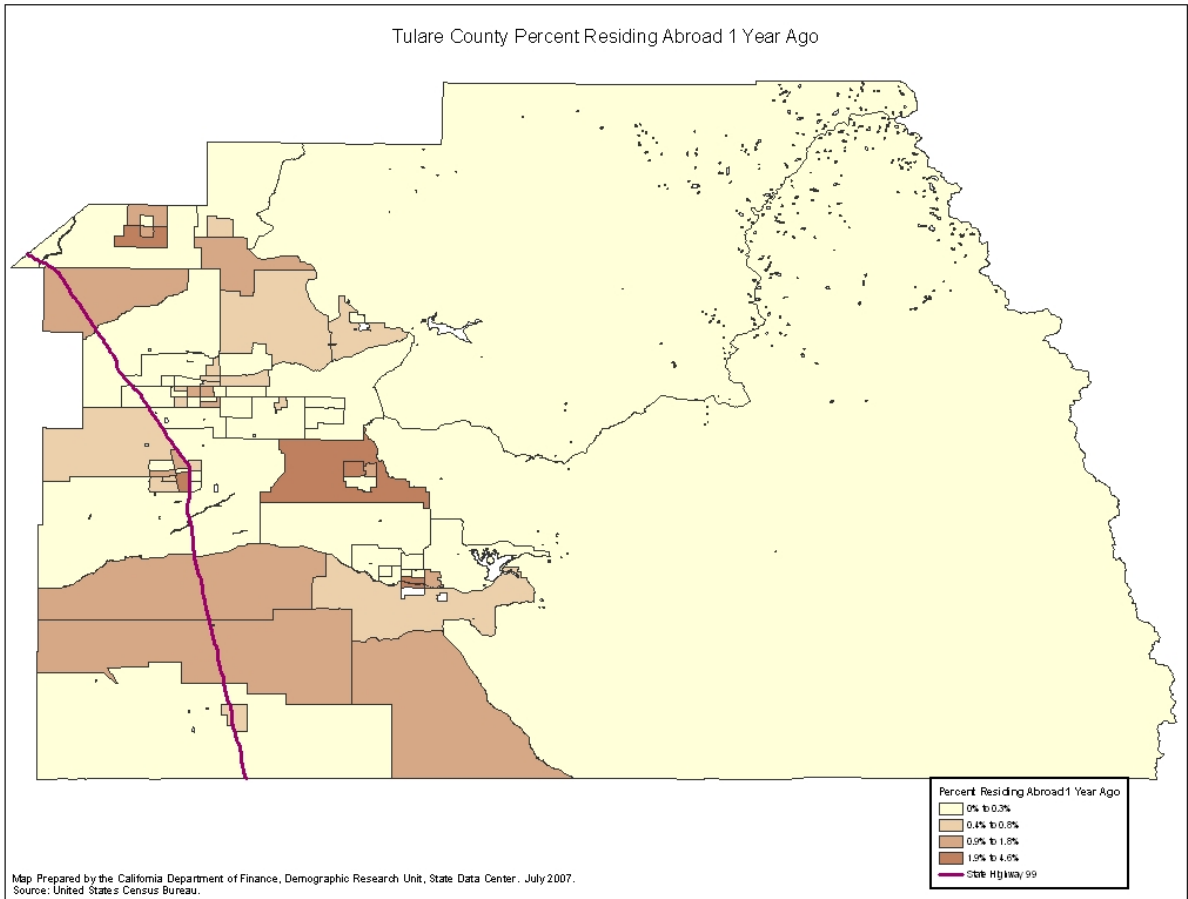
Map Prepared by the California Department of Finance, Demographic Research Unit, State Data Center. July 2007.  
Source: United States Census Bureau.

## Residence Abroad One Year Ago

Tulare County Residence 1 Year Ago (Abroad)								
	Estimate Period							
	1999	2000	2001	2002	2003	2004	2005	2006
		1999-01	2000-02	2001-03	2002-04	2003-05		
		1999-03	2000-04	2001-05				
ACS 1-Year		3,386	2,604	485	3,937	2,917	1,336	
ACS 3-year		2,702	2,175	2,305	2,455	2,893		
ACS 5-year			2,600	2,590	2,256			
ACS 1-Year Upper		4,804	3,954	897	6,002	4,227	1,879	
ACS 1-Year Point		3,386	2,604	485	3,937	2,917	1,336	
ACS 1-Year Lower		1,968	1,254	73	1,872	1,607	793	
ACS 3-Year Upper		3,311	2,816	3,175	3,284	3,640		
ACS 3-Year Point		2,702	2,175	2,305	2,455	2,893		
ACS 3-Year Lower		2,093	1,534	1,435	1,626	2,146		
ACS 5-Year Upper			3,251	3,177	2,844			
ACS 5-Year Point			2,600	2,590	2,256			
ACS 5-Year Lower			1,949	2,003	1,668			

### Tulare County Residence One Year Ago ACS Series and Trends

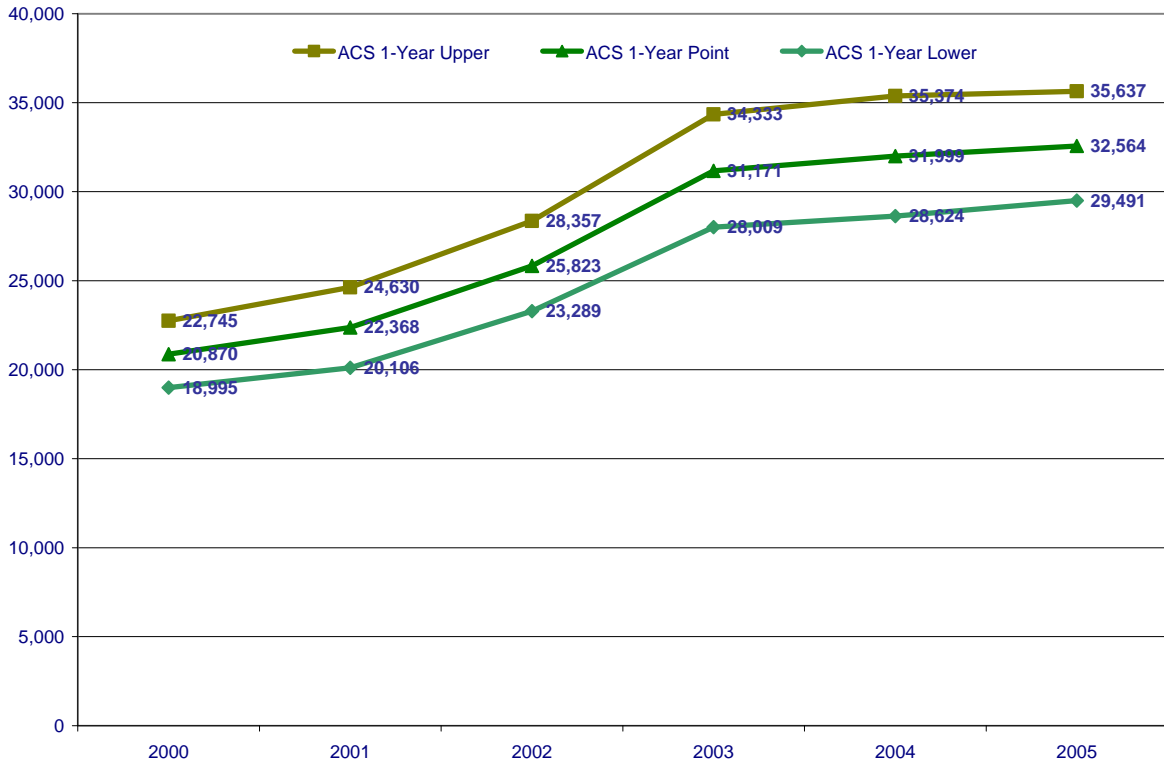




## Vacancy Rates

<b>San Francisco County Vacant Units</b>						
	<b>Estimate Period</b>					
	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
	<b>1999-01</b>	<b>2000-02</b>	<b>2001-03</b>	<b>2002-04</b>	<b>2003-05</b>	
		<b>1999-03</b>	<b>2000-04</b>	<b>2001-05</b>		
ACS 1-Year	20,870	22,368	25,823	31,171	31,999	32,564
ACS 3-year	21,828	23,186	26,511	29,957	31,933	
ACS 5-year		24,036	26,358	28,496		
ACS 1-Year Upper	22,745	24,630	28,357	34,333	35,374	35,637
ACS 1-Year Point	20,870	22,368	25,823	31,171	31,999	32,564
ACS 1-Year Lower	18,995	20,106	23,289	28,009	28,624	29,491
ACS 3-Year Upper	22,964	24,668	28,168	31,829	33,498	
ACS 3-Year Point	21,828	23,186	26,511	29,957	31,933	
ACS 3-Year Lower	20,692	21,704	24,854	28,085	30,368	
ACS 5-Year Upper		25,165	27,583	29,777		
ACS 5-Year Point		24,036	26,358	28,496		
ACS 5-Year Lower		22,907	25,133	27,215		

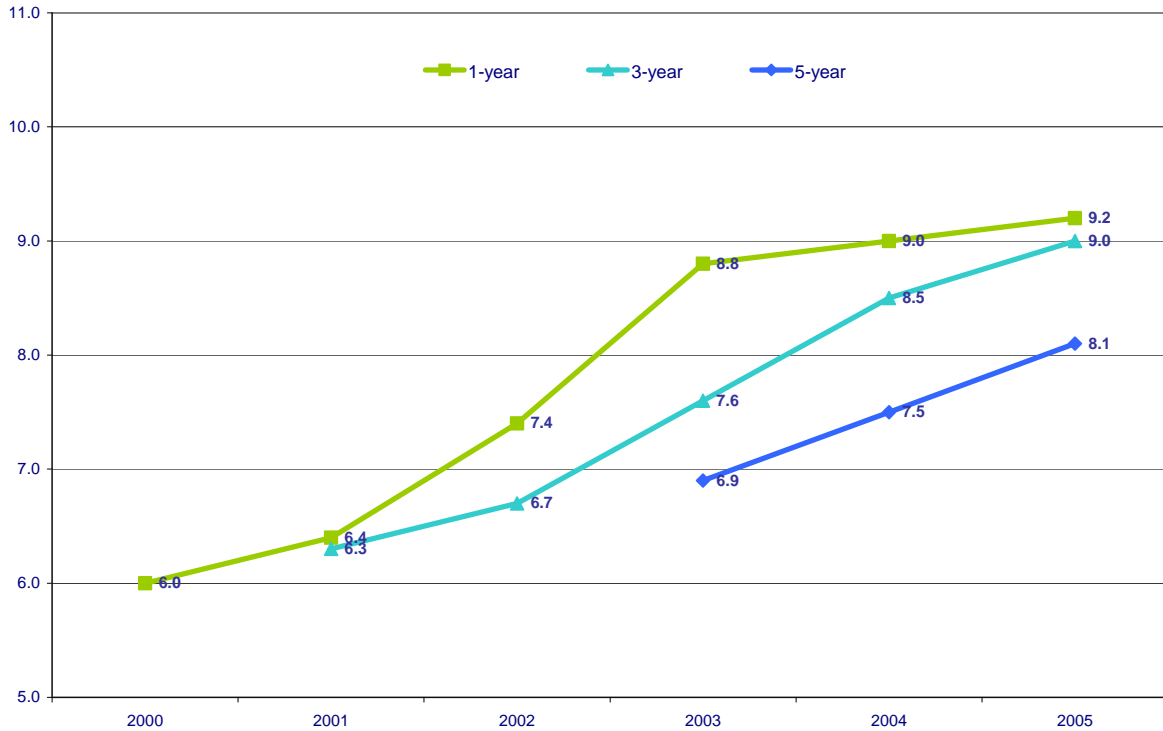
San Francisco ACS Vacant Units 1-Year Range



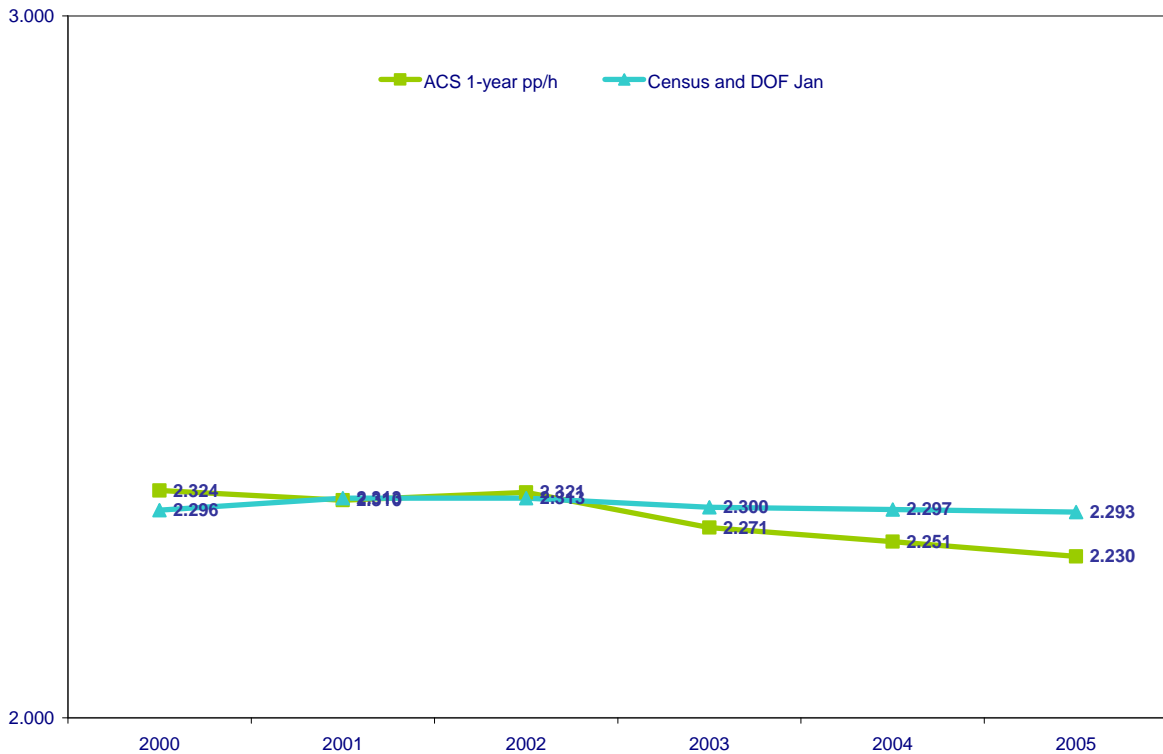
San Francisco ACS Vacancy Rates (mid-year alignment)



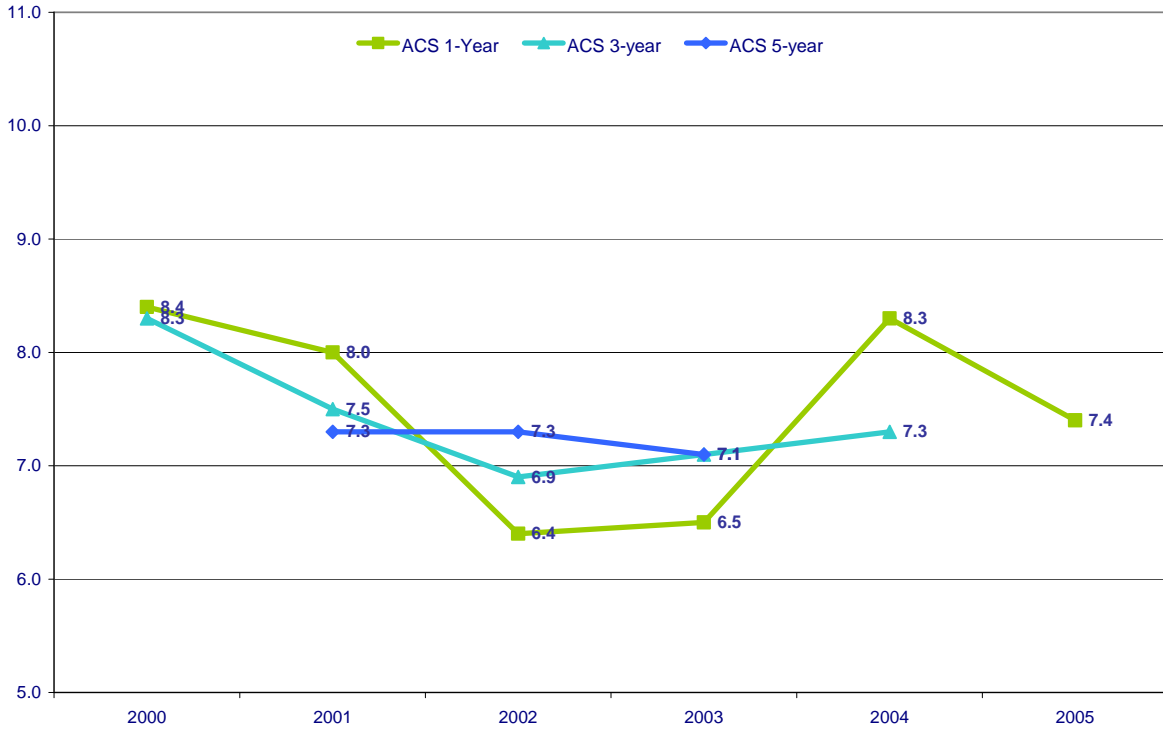
San Francisco ACS Vacancy Rates (end-year alignment)



San Francisco ACS Persons Per Household (calculated no ranges)



**Tulare ACS Vacancy Rates (mid-year alignment)**



**Tulare ACS Persons Per Household (calculated no ranges)**

