

**Demographic Analysis
and
Enrollment Projections
for the
Austin Independent School District**

2007-2008 Update

Dennis D. Harner and Associates

Harner and Associates
5926 Balcones Drive, Suite 205
Austin, Texas 78731
Phone: 512-454-1768
FAX: 512-420-9812
e-mail: ddharner@sbcglobal.net

**Demographic Analysis
And
Enrollment Projections
For the
Austin Independent School District**

2007-2008 Update

January 7, 2008

Principal Investigator:

Dennis D. Harner, Ph.D.

Table of Contents

	Page
I. Introduction	1
II. Geographical Information System (GIS) Update	1
III. District Enrollment Projections	4
IV. Housing Trends	14
V. Small Area Enrollment Projections	16
VI. Build-out Analysis	20

Tables

1. Socioeconomic Characteristics	4
2. Historic Enrollment Data	5
3. Historical Progression of Kindergarten to 12 th Grade	8
4. Final Enrollment Projections	9
5. Births by ZIP Code	12

Figures

1. Grade-to-Grade Enrollment Change	6
2. In and Out Migration	6
3. District Projections	11
4. Mid-Range Projections	11
5. Births and Kindergarten Enrollment	13
6. Births by Race/Ethnicity	14
7. Historical Housing Trends	18

Maps 1 through 32

Appendices

A. Planning Area Data	
B. Single Family Housing by Subdivision	
C. Attendance Zone Projections	
D. Planning Area Projections	

I. Introduction

Harner and Associates is in the fourth year of a five year contract with the Austin Independent School District (AISD) to provide demographic consulting services to assist the district in the implementation of its current bond program. Every year, an annual update of demographic research is presented to the district. The document is organized in the following manner: 1) update of the geographical information system (GIS); 2) district-level enrollment projections; 3) housing trends; and 4) attendance zone and planning area projections. The build-out analysis completed in the first year has not been updated, but is included.

II. Geographical Information System (GIS) Update

A GIS is a computer system that provides a way to examine spatial distributions of students and other data such as building permits, land use, and housing information. It can have “layers” of information such as streets, creeks, lakes, railroads, school locations, and attendance zones. Simply put, it is a computerized street map with database management capabilities.

AISD has used a program called ArcView and all work continues to be done with that tool. ArcView is the standard program used in the public sector for GIS analysis. The first task in this work element was to incorporate the latest data from the City of Austin. Particularly important are the new streets and land parcels. Map 1 shows the base map for the AISD with all the regular program campuses. (All maps are presented behind the “Maps” tab.)

It is common in school district planning to develop a set of geographical units called “planning areas” for the collection of data. Map 2 shows 642 planning areas that are being used at this time. The number of planning areas was increased from 582 in 2005 to 617 last year and then to 642 this year. The increase was necessary to provide more options in the drawing of new

attendance zones, although no new schools will be opened in the fall of 2008. It is these planning areas that are rearranged when the district redefines the attendance zones when schools are opened or closed. As in the past, these planning areas can be revised to accommodate future change. These planning areas can be combined to form the current attendance zones for all schools.

Next, the fall 2007 student file was “geocoded”. This simply means that each student’s residence is located by longitude and latitude on the map. Map 3 shows the results of this effort for 2007. The size of the dot reflects the number of students at a unique address. There were 82,764 students enrolled in October of 2007. Dots outside the district boundary are shown to reflect the fact that this year 466 students living outside the district attend district schools. These students are often the children of employees. This number has consistently been between 400 and 500 for the last several years.

Complicating demographic analysis recently is the fact that over 1400 students relocated to Austin as a result of natural disasters (i.e., hurricanes Katrina and Rita). The evacuees were excluded from the historical data for one year since including them could have skewed the historical trends. This year and last year these students have been included since the number in any one grade is relatively small and should not skew the trends. The students are dispersed to 80 campuses. Hence, the impact of those students on enrollment trends is negligible.

Students are counted by planning area, by grade, and by socioeconomic characteristics. Maps 4 through 9 show the student distribution by the following variables: Asian, African-American, Hispanic, white, low income, and “limited English proficient” (LEP). Appendix A is a table listing the number of students in each planning area by these socioeconomic variables. This table includes both regular program students and special education students. This data file is the basic input into the planning area projections presented elsewhere in the report.

Map 4 shows the distribution of the Asian population. High concentrations are found in a number of planning areas in far north Austin, along MoPac Expressway near Far West Boulevard, between Lamar Boulevard and Burnet Road, west of Highway 183 in northwest Austin, and along Lake Austin Boulevard in an area with “married student housing” for students at the University of Texas. The African-American students are concentrated in east Austin east of IH-35 and north of Twelfth Street and south of Highway 290 (see Map 5). For Asian and African-American, the map coloring shows the percent of the total found in a planning area. This is done to minimize the impact of small numbers. For instance, a planning area might have 2 students, one Asian and one African-American. If we used the more traditional percent of local enrollment, the planning area would be 50 percent Asian and 50 percent African-American. However, the number of students is so small that it does not represent a concentration of one category of student or another.

With much larger numbers, the more traditional percent of local enrollment was used for all the remaining characteristics. The Hispanic population, now the largest racial/ethnic group in the district, is very prominent in east Austin, in north Austin east of Burnet Road, and in south Austin east of Manchaca Road (see Map 6). White enrollment (Map 7) is predominant in northwest, west, and southwest Austin in those areas where minority enrollment is low. Low-income enrollment (those eligible for the school lunch program) as shown by Map 8 is concentrated in areas with high minority enrollment. Students classified as LEP (“limited English proficient”) are scattered throughout the district but are especially concentrated in northeast Austin, southeast, and south central Austin (see Map 9). Spanish and Vietnamese are the two most common foreign languages.

With regard to these socioeconomic characteristics, the district continues to experience change. Table 1 compares the current socioeconomic statistics with those for the previous five years. Every year, the Hispanic percentage has

increased while the white and African-American percentages have declined. Actually, the total number of African-Americans and whites has been declining too. Low income and LEP enrollment have increased every year, and these trends are likely to continue.

Table 1. Socioeconomic Characteristics							
Characteristic	School Year						
	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
America-Indian	0.3%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%
Asian, Pacific Islander	2.7%	2.7%	2.8%	2.8%	3.0%	3.1%	3.2%
African-American	15.0%	14.4%	13.7%	13.3%	12.7%	12.7%	12.1%
Hispanic	49.6%	51.6%	53.1%	54.7%	56.0%	57.0%	58.1%
White	32.5%	31.1%	30.2%	29.0%	28.1%	26.9%	26.4%
Low Income	50.1%	53.0%	53.9%	58.0%	61.4%	62.5%	57.1%
Limited English	18.7%	19.6%	20.9%	20.7%	22.5%	22.4%	23.8%

III. District Enrollment Projections

District-level projections are used for general planning purposes and they also provide a control total for the planning area projections. Harner and Associates always uses a “cohort-survival” model to prepare these projections. This is a common approach, especially at the district level. Each grade (“cohort”) is advanced from one year to the next based upon historical trends. Table 2 shows the data for the last six years (top portion). Table 2 also shows the absolute change from one grade to the next from one year to the next (bottom portion). Included in the bottom portion are averages for the five year trend, the last three years, and the last two years. Figure 1 shows graphically the trend for the last five years. Figure 2 breaks the net change into its two components, in-migration of students and out-migration for the last two years (2005 to 2006 and 2006 to 2007). We did not identify new students in pre-kindergarten because early childhood is not actually a preceding grade. Similarly, we show no twelfth graders leaving the district because most leave through graduation.

Table 2. Historic Enrollment Data as of Fall 2007

Enrollment by Year and Grade

Fall	Grade																		
	EC	PK	KG	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	All	EC>5	6-8	9>12
2002-03	416	3834	6447	6429	6153	6157	5930	5685	5603	5698	5320	6894	5249	4437	4211	78,463	41,051	16,621	20,791
2003-04	656	3971	6645	6540	6240	6051	5940	5799	5404	5550	5601	6553	5377	4406	4097	78,830	41,842	16,555	20,433
2004-05	665	4482	6850	6907	6374	6184	5902	5695	5532	5293	5461	6657	5032	4742	4168	79,944	43,059	16,286	20,599
2005-06*	538	4389	7397	6997	6615	6207	5998	5753	5316	5429	5242	6394	5392	4412	4363	80,442	43,894	15,987	20,561
2006-07	435	4534	7313	7500	6906	6576	6138	5878	5530	5365	5396	6486	5255	4614	4162	82,088	45,280	16,291	20,517
2007-08	440	4649	7396	7299	7113	6627	6265	5849	5516	5328	5320	6547	5118	4614	4683	82,764	45,638	16,164	20,962

* Excludes hurricane evacuees

Annual Grade-to-Grade Change

	EC>EC	PK>PK	KG>KG	KG>1	1>2	2>3	3>4	4>5	5>6	6>7	7>8	8>9	9>10	10>11	11>12
02>>03	240	137	198	93	-189	-102	-217	-131	-281	-53	-97	1233	-1517	-843	-340
03>>04	9	511	205	262	-166	-56	-149	-245	-267	-111	-89	1056	-1521	-635	-238
04>>05	-127	-93	547	147	-292	-167	-186	-149	-379	-103	-51	933	-1265	-620	-379
05>>06	-103	145	-84	103	-91	-39	-69	-120	-223	49	-33	1244	-1139	-778	-250
06>>07	5	115	83	-14	-387	-279	-311	-289	-362	-202	-45	1151	-1368	-641	69
5 Year Avg	5	163	190	118	-225	-129	-186	-187	-302	-84	-63	1123	-1362	-703	-228
Last 3	-75	56	182	79	-257	-162	-189	-186	-321	-85	-43	1109	-1257	-680	-187
Last 2	-49	130	-1	45	-239	-159	-190	-205	-293	-77	-39	1198	-1254	-710	-91

Figure 1. Grade-to-Grade Enrollment Change (Net), Last 5 Years

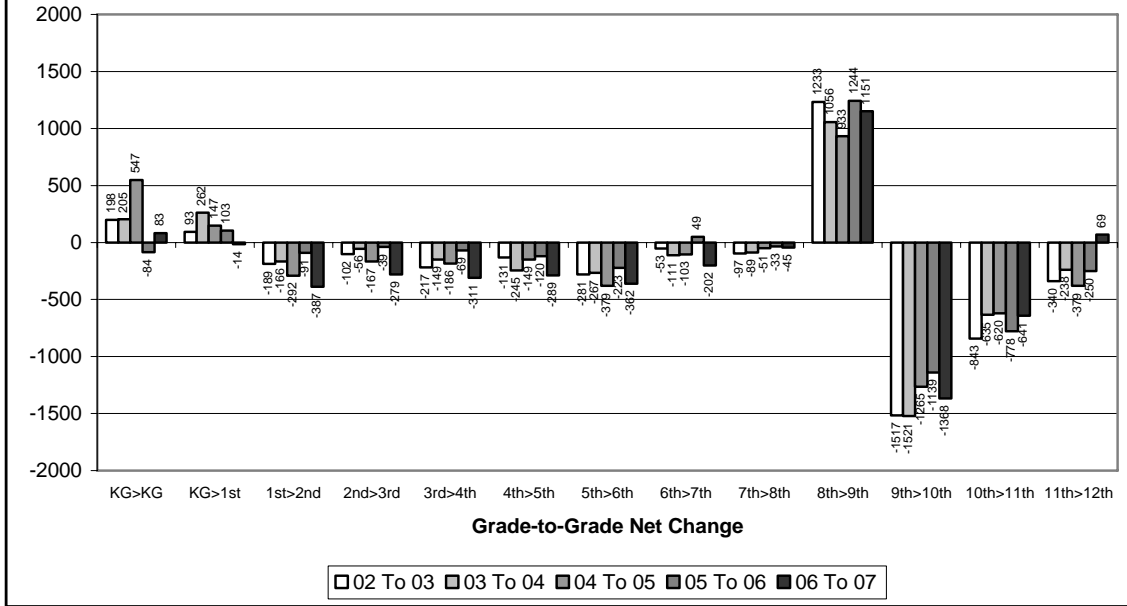
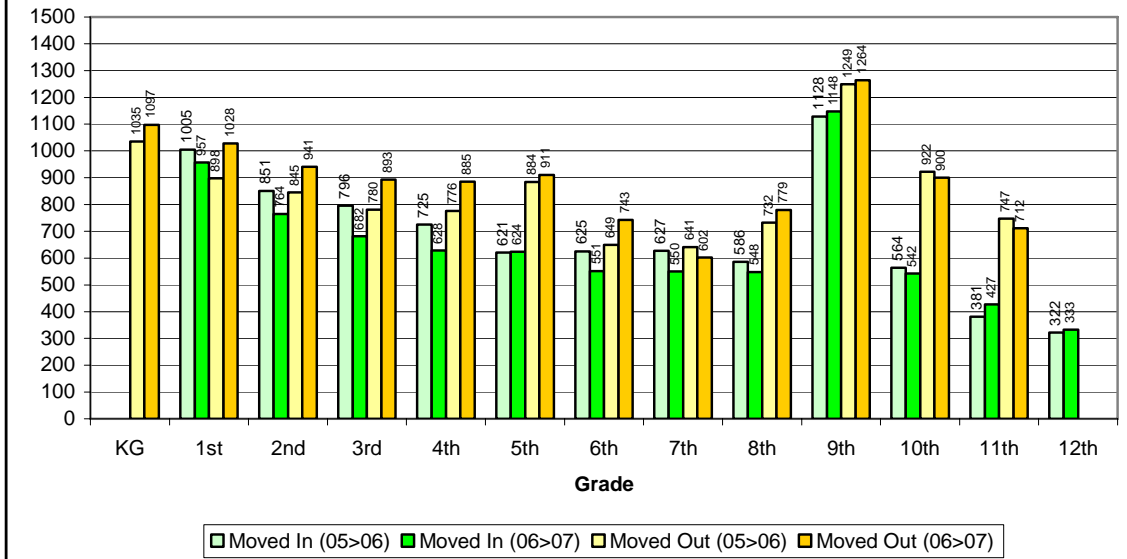


Figure 2. In and Out Migration, Last Two Years



One should be immediately impressed by the consistency over the last six years as shown by Figure 1. For many years, AISD changed little from one year to the next in kindergarten enrollment. This has changed since 2000. There was year-over-year growth every year until 2006, when kindergarten actually declined by 84 from 2005. Kindergarten grew by 83 from 2006 to 2007. Perhaps the very large increase in 2005 of over 500 was an anomaly which downwardly affected the kindergarten enrollment in 2006. Growth from kindergarten to first grade is very common in many districts, particularly as students from private kindergarten enter public schools in first grade. Net losses in the next seven grades are very significant for the AISD. These losses, while not large at any one grade, add up to a large loss of students from the district. Unfortunately, low net losses between 2005 and 2006 were followed by larger net losses between 2006 and 2007.

The declines indicate that there is a net migration of students out of the district in these grades (basically elementary school and middle school). Figure 2 shows the magnitude of the in and out migration for each grade from 2005 to 2006 and from 2006 to 2007. The total in-migration was 8229 between 2005 and 2006, and 7750 between 2006 and 2007. The in-migration decreased by 479 between the 2006 school year and 2007. The total out-migration was 10,151 between 2005 and 2006, and 10,774 between 2006 and 2007. Over 14 percent of the 2005 enrollment was not enrolled in AISD in 2006, but the percent increased to nearly 15 between 2006 and 2007. While the numbers in each direction are large, the most consistent trend is that out-migration exceeds in-migration every year. This year the difference was over 3000 students.

The increase from eighth to ninth grade is not growth; it shows that many freshman students do not earn enough credits in the first year of high school to be advanced to the tenth grade. Hence, the freshman class appears to be very large. This is very common, especially in urban districts. Declines over the next

three grades remove the surplus of the ninth grade students. This fact is not unusual in urban districts.

The net effect of the grade-to-grade trends just discussed can be summarized through the examination of the progression of kindergarten students to the twelfth grade in the recent past shown in Table 3. On average, the decline has been over 1800 students, or 32 percent. Obviously, these are “net” numbers, but they do show that for many years the district has been losing many students between kindergarten and twelfth grade (regardless of the reason) and they are not being replaced.

Table 3.

Historical Progression of Kindergarten to Twelfth Grade

Kindergarten			Twelfth Grade		Change
<u>Year</u>	<u>Students</u>		<u>Year</u>	<u>Students</u>	
1985	5133	→	1997	3075	-2058
1986	5325	→	1998	3336	-1989
1987	5412	→	1999	3419	-1993
1988	5626	→	2000	3603	-2022
1989	5550	→	2001	4197	-1353
1990	5750	→	2002	4211	-1539
1991	5697	→	2003	4097	-1600
1992	6046	→	2004	4168	-1878
1993	6249	→	2005	4363	-1886
1994	6120	→	2006	4162	-1958
1995	6532	→	2007	4683	-1849

Table 4 shows three projections for the district for the next ten years. The low series is at the top, the mid-range in the middle, and the high series at the bottom. For grades one through twelve, a cohort (grade) is advanced from one grade to the next from one year to the next based upon historical trends. For instance, under the low-growth scenario, kindergarten would increase by 100 as it moved to the first grade. Under the high-growth scenario, it would increase by 200 per year. The mid-range is the average of the two, 150 per year.

Table 4. District Enrollment Projections

Low Range Projections

Fall	Grade																		
	EC	PK	KG	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	All	EC>5	6>8	9>12
2008-09	552	4593	7330	7471	7049	6913	6377	6015	5499	5366	5228	6320	5147	4318	4264	82,442	46,300	16,093	20,049
2009-10	549	4552	7289	7405	7221	6849	6663	6127	5665	5349	5266	6228	4920	4347	3968	82,398	46,655	16,280	19,463
2010-11	552	4527	7321	7364	7155	7021	6599	6413	5777	5515	5249	6266	4828	4120	3977	82,704	46,952	16,541	19,211
2011-12	558	4547	7405	7396	7114	6955	6771	6349	6063	5627	5415	6249	4866	4028	3770	83,113	47,095	17,105	18,913
2012-13	558	4598	7405	7480	7146	6914	6705	6521	5999	5913	5527	6415	4849	4066	3678	83,774	47,327	17,439	19,008
2013-14	558	4598	7405	7480	7230	6946	6664	6455	6171	5849	5813	6527	5015	4049	3716	84,476	47,336	17,833	19,307
2014-15	558	4598	7405	7480	7230	7030	6696	6414	6105	6021	5749	6813	5127	4215	3699	85,140	47,411	17,875	19,854
2015-16	558	4598	7405	7480	7230	7030	6780	6446	6064	5955	5921	6749	5413	4327	3865	85,821	47,527	17,940	20,354
2016-17	558	4598	7405	7480	7230	7030	6780	6530	6096	5914	5855	6921	5349	4613	3977	86,336	47,611	17,865	20,860
2017-18	558	4598	7405	7480	7230	7030	6780	6530	6180	5946	5814	6855	5521	4549	4263	86,739	47,611	17,940	21,188

Mid-Range Projections

Fall	Grade																		
	EC	PK	KG	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	All	EC>5	6>8	9>12
2008-09	559	4609	7413	7496	7074	6963	6452	6090	5549	5441	5268	6420	5297	4418	4314	83,363	46,656	16,258	20,449
2009-10	561	4619	7443	7513	7271	6924	6788	6277	5790	5474	5381	6368	5170	4597	4118	84,294	47,396	16,645	20,253
2010-11	566	4637	7509	7543	7288	7121	6749	6613	5977	5715	5414	6481	5118	4470	4297	85,498	48,026	17,106	20,366
2011-12	573	4678	7601	7609	7318	7138	6946	6574	6313	5902	5655	6514	5231	4418	4170	86,640	48,437	17,870	20,333
2012-13	577	4734	7651	7701	7384	7168	6963	6771	6274	6238	5842	6755	5264	4531	4118	87,971	48,949	18,354	20,668
2013-14	580	4765	7701	7751	7476	7234	6993	6788	6471	6199	6178	6942	5505	4564	4231	89,378	49,288	18,848	21,242
2014-15	584	4795	7751	7801	7526	7326	7059	6818	6488	6396	6139	7278	5692	4805	4264	90,722	49,660	19,023	22,039
2015-16	588	4826	7801	7851	7576	7376	7151	6884	6518	6413	6336	7239	6028	4992	4505	92,084	50,053	19,267	22,764
2016-17	592	4857	7851	7901	7626	7426	7201	6976	6584	6443	6353	7436	5989	5328	4692	93,255	50,430	19,380	23,445
2017-18	596	4888	7901	7951	7676	7476	7251	7026	6676	6509	6383	7453	6186	5289	5028	94,289	50,765	19,568	23,956

High Range Projections

Fall	Grade																		
	EC	PK	KG	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	All	EC>5	6>8	9>12
2008-09	565	4624	7496	7521	7099	7013	6527	6165	5599	5516	5308	6520	5447	4518	4364	84,282	47,010	16,423	20,849
2009-10	572	4685	7596	7621	7321	6999	6913	6427	5915	5599	5496	6508	5420	4847	4268	86,187	48,134	17,010	21,043
2010-11	580	4747	7696	7721	7421	7221	6899	6813	6177	5915	5579	6696	5408	4820	4597	88,290	49,098	17,671	21,521
2011-12	587	4808	7796	7821	7521	7321	7121	6799	6563	6177	5995	6779	5596	4808	4570	90,162	49,774	18,635	21,753
2012-13	595	4869	7896	7921	7621	7421	7221	7021	6549	6563	6157	7095	5679	4996	4558	92,162	50,565	19,269	22,328
2013-14	602	4931	7996	8021	7721	7521	7321	7121	6771	6549	6543	7357	5995	5079	4746	94,274	51,234	19,863	23,177
2014-15	610	4992	8096	8121	7821	7621	7421	7221	6871	6771	6529	7743	6257	5395	4829	96,298	51,903	20,171	24,224
2015-16	617	5054	8196	8221	7921	7721	7521	7321	6971	6871	6751	7729	6643	5657	5145	98,339	52,572	20,593	25,174
2016-17	625	5115	8296	8321	8021	7821	7621	7421	7071	6971	6851	7951	6629	6043	5407	100,164	53,241	20,893	26,030
2017-18	633	5177	8396	8421	8121	7921	7721	7521	7171	7071	6951	8051	6851	6029	5793	101,828	53,911	21,193	26,724

In the low series, kindergarten is projected to change very little over the next decade. Yet, kindergarten enrollment would be near 7300 throughout the projection period, well above any recent year other than 2005 and 2006. While there has been growth in the last few years, the district went from 1995 to 2002 with essentially no growth in kindergarten while the number of births increased steadily. In the high series, kindergarten enrollment would increase by 100 per year. The mid-range projection shows average growth of 51 per year. Figure 4 summarizes the three district-level projections while Figure 5 presents the mid-range by school type.

Kindergarten is particularly important for long-range district projections because it drives any growth or decline well into the future. Pre-kindergarten enrollment is not an adequate measure of in-coming kindergarten enrollment since that program is not as large as kindergarten, although it has been increasing recently at a greater rate than kindergarten. Also, pre-kindergarten fluctuates considerably based upon eligibility. Birth data are often a better indicator of future kindergarten enrollment. Table 5 shows births by ZIP code from 1993 through 2007 and Figure 5 shows the relationship between births and kindergarten enrollment five years later. Between 1995 and 2000 the number of kindergarten students actually dropped by 153, from 6425 to 6272. The number of births in these ZIP codes had increased by 513 between 1990 and 1995. Obviously, an increase in births does not necessarily mean an increase in kindergarten. From 2000 to 2007, kindergarten enrollment increased by 1124 while the births five years previous increased by 1743 from 9471 to 11,160. Births in 2000, 2001, 2002, and 2003 were well above the level of 10,904 in 1999. It is this recent increase in births that lead to the conclusion that recent increases in kindergarten were to be expected. However, it is important to recognize that this relationship is not a perfect indicator. The biggest problem is that the area encompassed by the ZIP codes is larger than the AISD boundary and includes births that occur in adjacent school districts. No doubt, it is the best indicator available.

Figure 3. District Projections

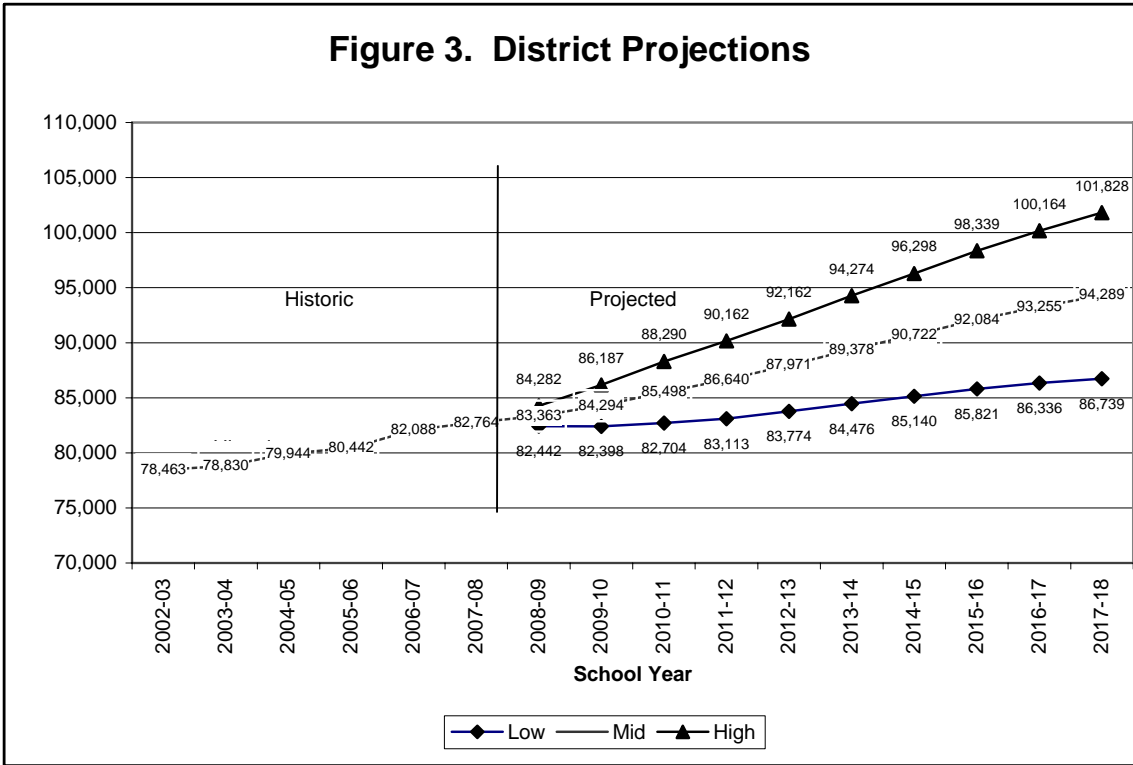


Figure 4. Mid-Range Projections by School Type

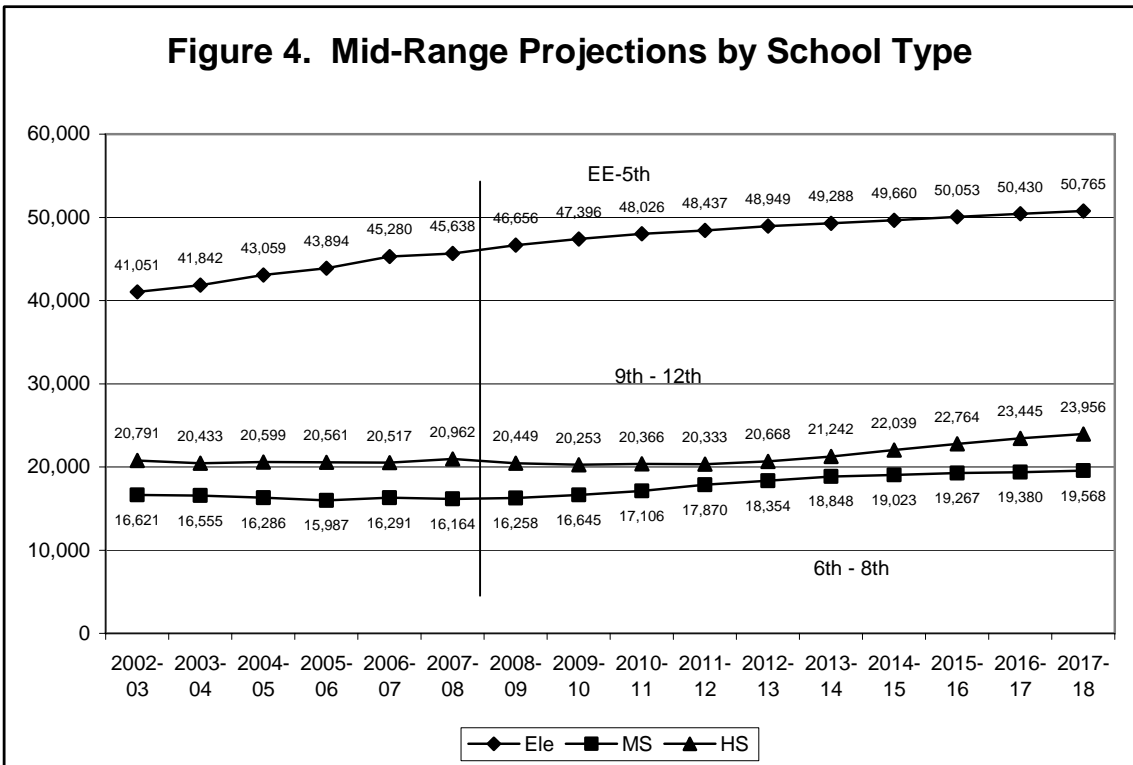
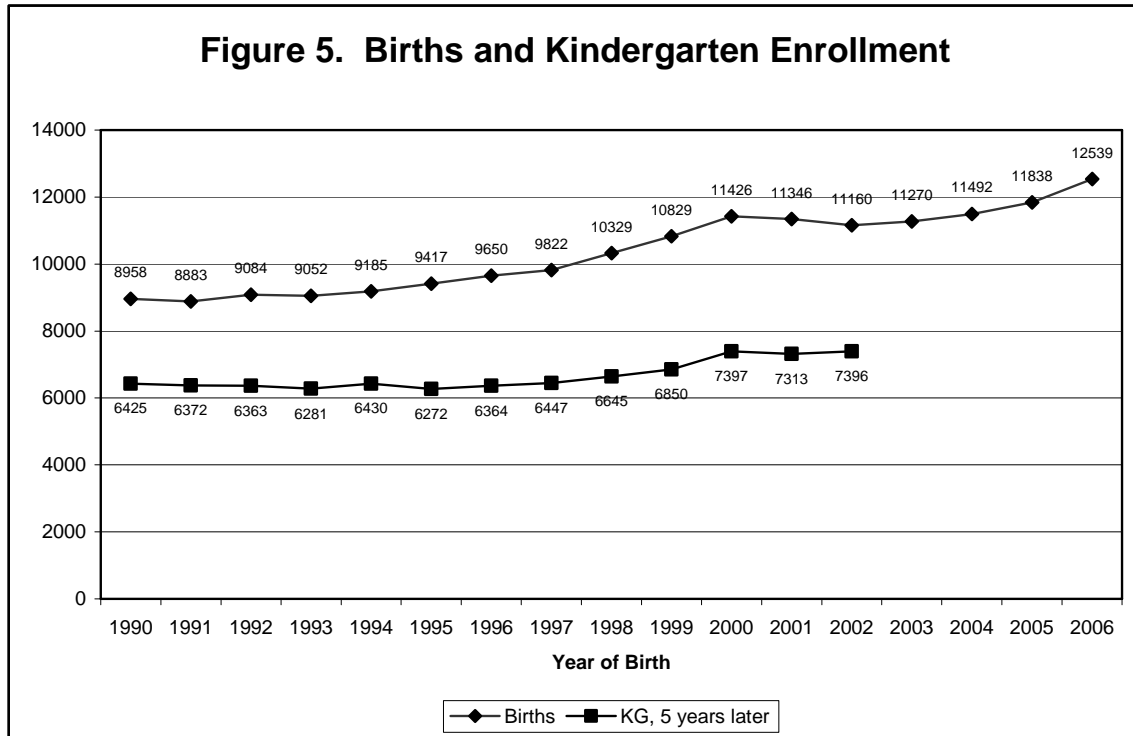


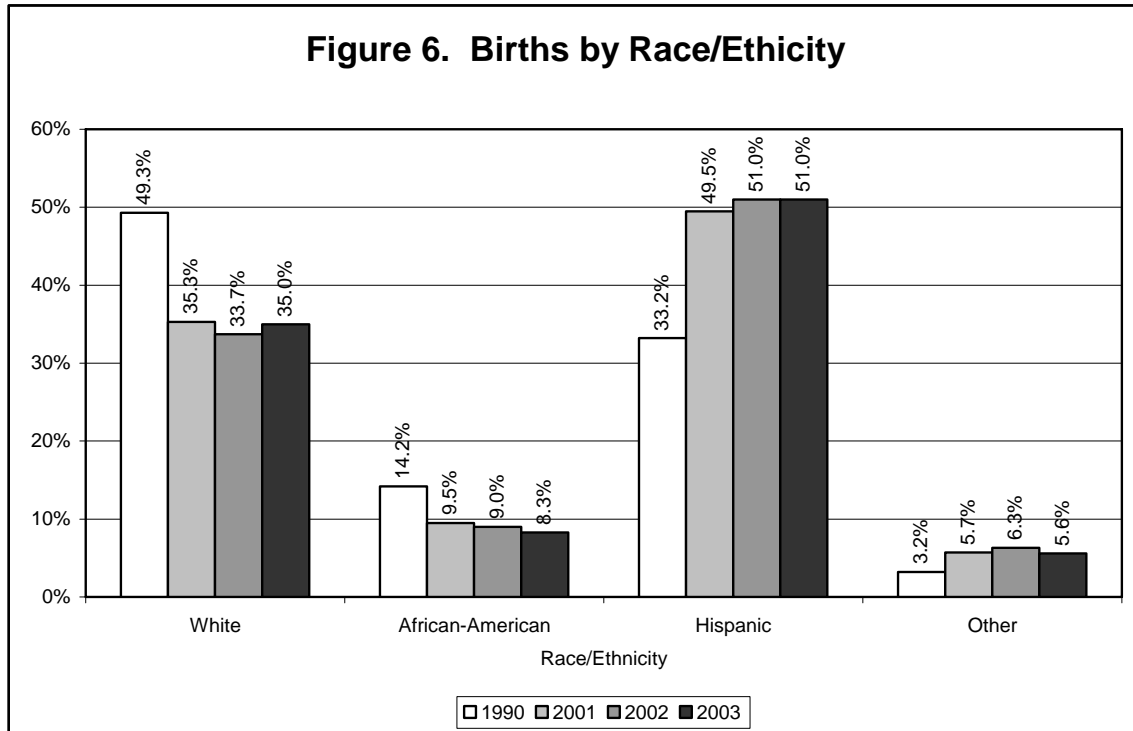
Table 5. Births by ZIP Code, 1993 to 2007

ZIP	Year															Change '00 to '07
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	
78701	12	20	25	22	11	23	14	9	11	20	25	18	31	16	19	7
78702	517	503	523	541	515	533	574	541	491	465	423	400	411	429	424	-112
78703	269	303	241	276	304	264	268	256	286	228	297	235	226	254	239	-2
78704	626	684	628	658	643	651	650	656	675	628	626	638	602	590	613	-66
78705	37	64	62	56	64	47	50	69	63	53	46	51	51	53	38	-16
78721	236	241	276	255	253	249	249	247	256	237	270	242	245	259	289	12
78722	89	81	73	77	66	57	84	84	87	78	67	77	74	72	70	-12
78723	515	521	563	580	545	597	702	690	648	619	605	608	628	671	667	-19
78724	173	192	189	230	223	260	309	338	389	368	362	345	356	435	496	97
78727	278	292	251	277	308	348	356	348	376	383	342	388	392	403	376	55
78730	26	34	59	55	61	64	71	98	111	96	114	97	91	96	81	-2
78731	218	206	244	236	226	219	226	263	230	250	223	257	238	260	260	-3
78735	50	55	51	77	81	132	153	148	124	171	164	185	215	184	200	36
78736	95	97	89	80	100	73	95	83	65	80	68	68	82	88	94	5
78737	48	52	46	71	72	66	64	41	46	43	62	81	94	111	117	70
78739	76	96	90	98	109	126	111	146	125	154	156	171	190	198	254	52
78741	519	539	571	579	598	680	668	776	739	742	727	859	916	1027	1003	251
78744	609	573	628	637	760	775	814	893	862	857	810	864	919	977	1045	84
78745	893	895	960	863	865	872	897	951	923	874	888	887	918	923	974	-28
78747	39	55	43	56	60	64	69	69	87	96	145	163	177	186	209	117
78748	313	353	342	363	401	408	452	499	519	531	513	533	591	553	617	54
78749	329	332	366	379	413	441	452	545	586	584	585	542	547	581	540	36
78750	259	260	275	260	285	276	272	207	209	199	276	267	252	281	302	74
78751	170	157	146	145	159	163	156	173	158	136	138	137	128	139	123	-34
78752	397	386	395	419	385	451	437	526	517	455	421	416	466	504	467	-22
78753	690	699	740	720	758	836	942	931	970	1037	1090	1150	1120	1160	1132	229
78754	47	54	54	91	85	77	82	89	99	95	86	122	153	179	215	90
78756	103	95	82	87	82	92	83	109	106	99	95	82	93	108	93	-1
78757	268	272	295	279	267	293	286	344	314	268	315	276	293	287	327	-57
78758	742	652	687	715	676	766	786	820	850	846	868	902	898	1051	1040	231
78759	409	422	423	468	447	426	457	477	424	468	463	431	441	464	420	-13
Total	9052	9185	9417	9650	9822	10329	10829	11426	11,346	11,160	11,270	11,492	11,838	12,539	12,744	1269



It is important to note that AISD area births have changed with regard to race and ethnicity. Figure 6 shows that since 1990, white births have declined from over 49 percent of the total to 35 percent, and African-American births have dropped from 14 percent to eight percent. Hispanic births increased from 33 to 51 percent, and “other” births increased from 3 to nearly 6 percent in the same period. Unfortunately, race and ethnicity for birth data have not been available since 2003.

Map 10 shows the number of births by ZIP code in 2007. The largest numbers of births (dark green) are in ZIP codes in southeast Austin (78741, 78745 and 78744), and northeast in North Austin (78758 and 78753). Map 11 shows where the number of births has either grown or declined. The central part of Austin continues to experience declines, while the periphery has growth.



IV. Housing Trends

This section focuses on the housing stock of the district and relates it to current enrollment. The relationship between housing growth and student growth has changed in recent years in urban areas. Harner and Associates has observed for several years a decline in the number of students per housing unit throughout Texas. The old view that there would be an average of approximately 1.0 or more students in each housing unit is no longer valid. Generally, it is much lower. Also, the number of students per unit varies significantly among neighborhoods. The number of students coming from multi-family housing has always been a source of uncertainty. Some apartment complexes have a large number of students per units, while others have no students. Again, there is geographical variation in these trends. The purpose of this section is to provide basic research information that is used in the planning area projections presented in the next section.

The primary source of housing data is the Travis Central Appraisal District (TCAD) tax roll file provided to the district in 2007. This file reflects the district's property tax roll as of the beginning of 2007. This file was geocoded in the same way the student file was geocoded. Map 12 shows the results of this effort for single family housing. "Single family" (category A) includes single family houses (but excludes townhouses and condominiums) and manufactured housing on a lot owned by the owner of the unit. The district had a total of 126,096 single family units of all types and 1358 manufactured houses on an individual lot. Map 12 also shows 7557 "vacant" lots in the district. Many of the lots in established neighborhoods have been there for years or are the result of the demolition of a house. Those at the periphery of the district are more likely to be lots ready for construction in the near future in platted subdivisions. Map 12 also shows 3878 properties classified as "inventory," which means that the house is not complete. Nearly all these are in active subdivisions at the periphery of the district.

Map 13 shows the distribution of multi-family housing. There are 1374 apartment complexes with a total of 95,386 units. There are 9043 duplexes, 163 tri-plexes, and 1065 four-plexes. Combining these four categories of multi-family, there are 118,221 total living units. This year, we have taken the category A4 (townhouse and condominium) and included it with the multi-family ("B") category on Map 13. We counted 17,296 A4 units at 2969 distinct addresses. Previously, we had undercounted the number of A4 units because we were looking at only the A4 parcels, not the total number of taxable properties on a parcel. Since condos and town houses are individually owned, there are often many units on one parcel. Adding this to 118,221 category "B" multi-family yields a total of 135,439 "non-single family, detached" units.

The average value of single family units according to TCAD was over \$232,000 in mid-2007. Map 14 shows the variation of house value throughout the district. The higher value housing is concentrated in west Austin, northwest Austin, southwest Austin, and far south Austin. At the planning area level, the range in

average value was from \$21,000 to \$1,700,000. The least valuable properties are in east, northeast, and southeast Austin. Older housing (see Map 15) is in those neighborhoods surrounding the central business district of Austin. Relatively old housing is found both in affluent neighborhoods and poor neighborhoods. The average house has 1890 square feet with the range by planning area being from below 800 square feet to over 11,000 square feet (see Map 16). The average house size follows the same general geographical trend as shown by Map 14 with assessed value.

Finally, combining the student tabulations with the housing tabulations, it is possible to calculate the students per housing unit. For the entire district, nearly 51,000 students lived in over 126,000 single family units, or 0.40 per unit. The range by planning area is from zero to over 1.60 per house. Map 17 shows the results of this calculation for all grades at the planning area level. The high density on northeast, east, and southeast Austin is very different from that of west Austin. This is even more remarkable when one looks back at Map 16 to see that the smaller housing is in the areas with the highest number of students per unit.

Multi-family density has been more difficult to determine in the past because TCAD did not report the number of units until last year. In previous work, we estimated the number of units based upon the number of square feet. Now we know there are over 135,000 multi-family units (as described above) with over 32,000 students, or 0.24 per unit for the district as a whole. The range by planning area for those with apartments is from zero to over 1.50 per unit. Map 18 shows the density of students in multi-family facilities by planning area. This does include duplexes and other small multi-family housing. It should be noted that the above calculations are subject to error caused when a student does not report a unit number for multi-family housing. What is important about these density calculations is the geographical ranges in density that Maps 17 and 18 show.

V. Small Area Enrollment Projections

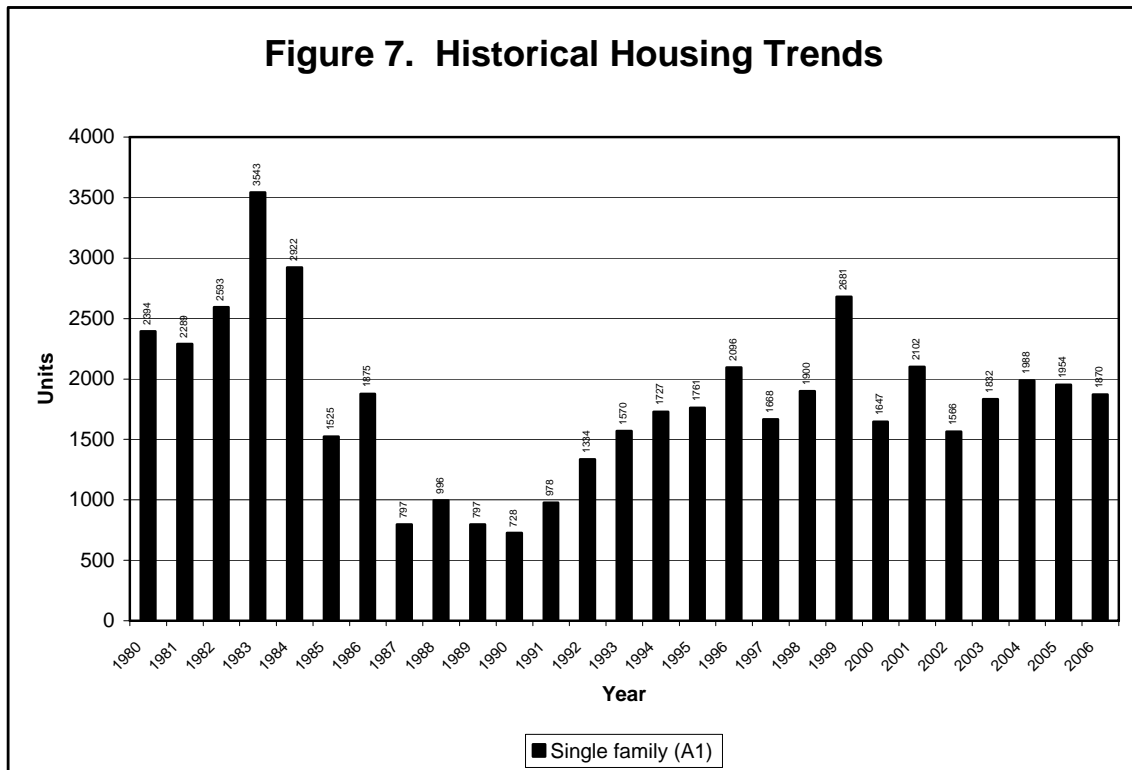
The most important goal of this project is a new set of planning area projections that can be combined to form attendance area projections. These can be used to evaluate attendance zone options and to analyze need for new schools and school sites.

The methodology is based upon the cohort survival model used for the district as a whole. Each grade is moved forward from one grade to the next from one year to the next. Kindergarten projections are based upon the size of the existing lower grades, not just on the existing kindergarten. This reduces the significant variation that can occur from one year to the next in any one grade. The mid-range projections presented in Table 4 are the control totals. That is, the sum of the planning area projections must essentially equal the mid-range totals for the district, less out-of-district transfers.

In addition to the normal progression of students in a cohort survival model, a growth factor reflecting new housing is added to the model. Recent single family housing development data were obtained from MetroStudy, a real estate research firm. Appendix B shows the basic data from the most recent quarterly report. The table is sorted by elementary attendance zone. Shown are housing starts for the last four quarters, inventory of houses, vacant developable lots (VDL), and lots to be developed in the future. In these four quarters, there were 2534 housing starts (of which 1676 were single family, detached). At the end of 2007, there were 875 lots in inventory, 2167 vacant available lots, and 13,806 “future” lots. Future lots are in subdivisions that have not been approved, but are very likely to be approved in the relatively near future. Map 19 shows the recent single family (both detached and condo) starts by subdivision for the last four quarters. Map 20 shows the number of lots in inventory plus the number of units in inventory by subdivision while Map 21 shows the locations of the “future” subdivisions. It is obvious that south Austin has the bulk of the growth but there

are a few subdivisions in north Austin, and the probability of significant future residential development in east Austin (see Map 21).

Enrollment growth is allocated to those planning areas likely to see enrollment increases due to current housing development trends. Map 22 shows the percent of total growth for each planning area for next year. We assumed an average of 0.4 elementary students per new single family unit. Over the last five years the district has averaged approximately 1900 new units per year (see Figure 7) according to data from the appraisal district and from MetroStudy. In these latest projections, the building rate has been assumed to be 1600 units per year for the next five years, down from 1800 assumed in the last study. Obviously there is considerable uncertainty in both the magnitude of the building rate and the location of building, especially in the distant years of the projection period. Map 23 shows the percent of housing growth allocated to each planning area from 2008 to 2011. Some subjectivity is involved in this part of the projections to account for projects very likely to develop in the near future, but not yet active.



The initial projections were totaled by grade and checked against the district level totals. For all three levels of schools, these initial projections were too high. This is because some areas of the district are experiencing out-migration. Maps 24, 25, and 26 show the magnitude of the out-migration by planning area and school type. The planning area projections were adjusted down for those areas with out-migration to reflect this reality. These projections are for both the regular program and special education.

Adjusting the projections to account for out-migration is a very important aspect of planning for AISD's future. Student mobility is very high and adds uncertainty to the projections because it is very difficult to predict. Between 2005 and 2006, 8231 students in grades one through twelve in 2006 were identified as new to AISD. Between 2006 and 2007, this number dropped to 7754. Between 2005 and 2006, 10,158 left the district in grades kindergarten through eleven. This number increased to 10,755 between 2006 and 2007.

Map 27 shows the projected change in elementary (early childhood through 5th grade) enrollment for each planning area for the next five years. There is an obvious spatial correlation between the areas with currently active housing developments and enrollment growth. However, there are many planning areas with projected growth simply based upon the age profile of the current population. Those areas with high percentages of students in the lower grades (kindergarten through second) are likely to experience growth as these large grades replace smaller grades ahead of them. Conversely, neighborhoods with relatively small enrollment in the lower grades are likely to decline in total enrollment, as larger cohorts are replaced by smaller cohorts. It is not unusual to have growing planning areas adjacent to declining planning areas. Map 28 and 29 show respectively the middle school and high school projections.

Appendix C provides enrollment projections for each attendance zone. As usual, these projections are for the students living in each planning area. No allowance

is made for transfers or programs such as magnet enrollment. There can be large differences in campus enrollment and attendance zone enrollment because of transfers and program locations. Appendix D has a listing of the projections by school type for each planning area.

VI. Build-out Analysis

(Note: This section has not been redone. However, it is included because several members of the Board were not in office last year and do not have the material.)

The projections described in previous sections focus on the relatively near future, five to ten years. However, as the urban area continues to expand, there will be less available land for residential development every year. Eventually, there will be no “raw” land for housing development. It is important for the district to have a reasonable estimate of the maximum number of students it might need to plan for with regard to facilities. This type of assessment is often referred to as a “build-out” analysis.

There are obviously many factors that one could consider in this type of analysis such as the density of housing (units per acre), persons per housing unit, students per family, trends in new construction, and trends in urban renewal. However, we have found that one variable, students per acre, can be used to prepare a reasonable estimate of build-out enrollment without a great deal of complex mathematical modeling.

Map 30 shows the current density by planning area in the AISD. The district (232 square miles or 148,266 acres) has an overall density of 0.55 students per acre. The white and yellow planning areas are below the district average of 0.55 per acre. These areas are at the periphery of the district or in traditionally non-residential areas such as the central business district. The green planning areas (density between 0.55 and 2.50) are in areas with traditional residential

development patterns. Through experience in other districts, most developing suburban areas have densities that fall into this range with the darkest green representing relatively high density for single family housing. The last four categories (density above 2.5 and shaded pink) represent very high density situations. This often occurs in areas with apartment facilities attractive to low income families with children. The planning areas along Riverside Drive in south-central Austin are a good example of high apartment density. This also happens in areas where the lot size is very small and the number of students per household is large such as parts of Circle C and in southeast Austin in the Rodriguez, Houston, Langford, and Widen attendance areas. The high density areas in northeast Austin in the Cook, Wooldridge, Barrington, and Hart zones result from a combination of both high density single family housing and relatively inexpensive apartments.

To prepare a build-out analysis, it is necessary to examine each planning area with respect to current density, availability of developable land, and other land use constraints. A good example of the last constraint would be areas where there are no large parcels to subdivide into large subdivisions. Tract homebuilders typically prefer large tracts to small ones. To help identify development constraints, land use data were obtained from the City of Austin. The focus of Map 31 is the identification of land that is likely to be developed with single family residences in the future. Areas that have no color are the undeveloped land. It should be clear that the district does not have numerous large tracts available for residential construction. In fact, initiatives in the last decade to conserve open space (the Balcones Canyon Lands and the Proposition 2 preservation programs) have had a dramatic impact on the number of large tracks in the southwest part of the district.

Using the above data, we evaluated each planning area with regard to growth potential. Many are built-out and are likely to experience little change in density. To allow for some enrollment increases, these planning areas were all assumed

to increase in density by ten percent. Areas with open land were assigned an ultimate density based upon comparisons with nearby planning areas. This is obviously a subjective set of decision-making criteria, but the goal is to establish a high build-out number that the district is likely to never experience. In that way, the district can work toward a facility plan that should cover the “worst case” scenario.

There are some very obvious short comings in this approach. Probably the most significant is that it does not explicitly address apartment growth. In looking at the current problems in northeast Austin and in the Linder area, apartments are the primary cause of the overcrowding. Will the same thing happen in far north Austin along Metric Boulevard as apartments now populated primarily by college students become old and less attractive? Another possibility is that older apartments will be demolished and replaced by housing less attractive to lower income families with children. It is beyond the scope of this assessment to try to deal with those uncertainties, but we are certainly aware that they exist.

Once a density was determined for each planning area, the area was multiplied by the density to derive a “build-out” estimate. Overall, the district could increase by 29,000 to nearly 110,000. If the district were to have an average annual growth rate of 1000, it would be three decades before build-out is reached as defined in this analysis. Map 32 identifies those areas with highest growth potential based upon available land in southeast Austin and in east Austin. The elementary grades would increase by approximately 15,000 students to nearly 60,000. The middle school grades would increase by nearly 6000 to nearly 22,000. The high school grades would increase by over 7000 to nearly 28,000 students.