

MADISON PUBLIC SCHOOLS

ENROLLMENT PROJECTIONS

UPDATED

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MADISON PUBLIC SCHOOLS ENROLLMENT PROJECTIONS UPDATE

INTRODUCTION

In 2014, a comprehensive ten year projection of student enrollments was developed for the Madison Public Schools. After looking at a variety of sources for data, and careful analysis of our findings, we summarized our findings as follows: “Our projections, based upon data from a variety of sources, are open to interpretation, as are all such projections. We cannot accurately predict and can only project the birth rate of residents, although births to Town residents can be expected to remain relatively constant unless there is a substantial influx of younger families. New development will continue to be constrained by limited space available for new housing. In-migration of students from outside the Town will tend to mitigate some of the enrollment decline we have seen in the past several years but this too will be limited by a high priced real estate market that might cause young families with school age children or young couples seeking to start a family to consider housing options in other more affordable communities. Our projections show that enrollment losses will continue but at a slowing rate as some limited new development and a renewed interest in senior housing hopefully opens up homes, presently occupied by seniors, for resale to younger families.”

Two years later we have been commissioned to revisit and review our findings.

Student enrollment for the past two years shows that our projections for these years are extremely close to actual enrollments and fall well within our margin of error for the study.

DATA SOURCES

Data was gathered from state, town and school officials that enabled us to draw significant conclusions relative to future school enrollments and future school space needs in Madison. The accuracy of these projections will be determined by comparing them with actual enrollments as the future evolves.

For the purpose of this report the following information was reviewed:

- 1) Enrollment Reports from school years 2005-06 through 2016-17, supplied by the Madison School Department and the Connecticut Department of Education.
- 2) Birth data: i.e. births to Madison residents supplied by the Madison Town Clerk and by the Connecticut Dept. of Public Health, Registry of Vital Statistics.
- 3) Information relative to new housing construction, proposed housing developments and sub-divisions were supplied by the Madison Town Planner and the Office of the Building Inspector.
- 4) Information relative to the Madison real estate market and relevant market data was gleaned from Zillow and from local real estate brokers.

GRADE GROUPINGS

The Madison education system is divided into three grade groupings. This format was maintained for this analysis to afford us the opportunity to look at the possible impact of increased enrollments at different grade levels. These groupings are:

Elementary grades	K - 4
Middle School grades	5 – 8
High School grades	9 – 12

BIRTH DATA

The Town Clerk's Office and the Connecticut Department of Public Health, Registry of Vital Statistics provided the birth data utilized in this analysis. It reflects births to residents of Madison whose children might be expected to attend the Madison Public Schools. **(Table I)** We have used the data provided by the state's Registry of Vital Statistics, which tends to be more complete in terms of all births to Madison residents no matter where the birth occurred but these records are complete only up to 2013. As a result we used birth data supplied by the Town Clerk's Office for the years 2014 - 2016. Births from 2017 through 2025 were estimated by using the average of each of the previous five years of birth data. (rolling 5 yr. average) This method tends to even out the natural peaks and valleys that occur in annual births over a number of years.

From January 2005 through December 31, 2013 there were a total of 904 (as per Registry of Vital Statistics) children born to residents of Madison, an average of 100 births per year. For the years 2014 through 2016 birth numbers from the Town clerk show total births of 276 or an annual average of 92 births to Madison residents. The average number of births varied from a high of 130 reported births in 2005 to a low of 81 reported births in 2013, which was the lowest number of reported births in the period studied. We have projected an average annual birth rate of 90 births for the period from 2017 through 2025 which reflects a relatively stable births rate.

HOUSING PERMITS & NEW DEVELOPMENT

Information provided by Town planner, David Anderson, relative to new home construction in Madison over the last three years, shows very limited new construction. **(Table II)** Because there are few large tracts of land remaining in Madison for new housing development, it is unlikely Madison will see large blocks of new home construction in the future with the exception of some condos or apartments which will yield few children of school age. Homes will be built on existing lots with no large multi-unit developments and teardowns and rebuilds of older existing homes will increase.

Table I

Births to Madison Residents

Year		Births		Diff.	% of Diff.
2025		90		0	0.0%
2024		90		0	0.0%
2023		90		1	1.1%
2022		89		-1	-1.1%
2021		90		0	0.0%
2020		90		-1	-1.1%
2019		91		2	2.2%
2018		89		1	1.1%
2017		88		-3	-3.3%
2016		91		-1	-1.1%
2015		92		-1	-1.1%
2014		93		12	14.8%
2013		81		-1	-1.2%
2012		82		-29	-26.1%
2011		111		25	29.1%
2010		86		1	1.2%
2009		85		-19	-18.3%
2008		104		7	7.2%
2007		97		-31	-24.2%
2006		128		-2	-1.5%
2005		130			

- Notes:**
- 1) Birth data from 2005-2013 from CT Dept. of Public Health Bureau of Vital Statistics
 - 2) Birth data from 2014 - 2016 from Madison Town Clerk
 - 3) Birth data from 2017-2025 estimated based on a five year rolling average

Table II
Madison Construction - New & Proposed

Year	Single Family homes	Single Family homes	Condos
	New	Teardown/rebuild	
2014	11	4	4
2015	9	8	4
2016	10	10	3
Planned	8		14

- Note**
- 1) Planned projects have been approved and construction is scheduled to begin this year
 - 2) There are some condo/apartment projects in the planning pipeline. Unlikely to be approved until late 2017-18

As a result, we anticipate the rate of new development in Madison will remain low creating no significant upward pressure on school enrollments.

POPULATION DATA

2010 census figures show Madison's population at 18,269, an increase of 411 residents or 2.3% over the 2000 census population **(Table III)**. Data from the Connecticut Department of Economic and Community Development show Madison's population growth slowing over the next several years; 18,239 in 2011, 18,291 in 2012 and 18,297 in 2013. In 2014 the town's population began to decline. Madison's population was reported at 18,284 in 2014 and 18,259 in 2015. The projected population for Madison in 2020 is 18,036, a decline of approximately 1.5% from the 2013 population. This a reflection of very limited growth and an aging population where the median age has risen to 47.1 yrs. considerably higher than the state average. Data from the 2010 census showed 6,971 occupied dwellings in Madison. Only 2, 496 of these households or 35.8% had individuals under 18 years of age but there were 2,303 households or 33.0% with residents 65 years and older. Also there were 4, 418 children between the ages of 5 years and 19 years living in Madison households which translates into 0.63 children per household.

A 2016 Town Profile compiled by the Connecticut State Data Center and the Connecticut Economic Research Center (CERCE) shows a total of 54 % of residents over the age of 45 and 21.0% of the population over 65. The US Census Bureau's American Fact Finder shows the population of residents ages 5-19 at 25.0%. Projections for 2020 and 2025 show a further decline in the total population going forward while the percentage of residents over 65 becomes a larger percentage of the general population and the percentage of residents in the 5-19 age bracket declines further. This represents an aging community where younger families with school age children are a minority.

It can be assumed that within the range of years covered by this study, a portion of senior residents will alter their living arrangements and will sell or move out of their current homes. These homes will normally be older, smaller and somewhat less expensive than newer homes and well suited to younger families with school age children. We anticipate these homes will be re-occupied with children of school age. But conversely they might also become the teardowns of the future. While we cannot quantify this population we project in-migration of new families with school age children and limited new development will somewhat offset students matriculating from the school system thereby slowing, but not reversing, the overall decline in school populations.

MADISON REAL ESTATE MARKET

The real estate market remains relatively slow during the winter months with real estate agents looking forward to an uptick as we move toward spring. The Zillow web site shows that as of February 1, 2017 there were approximately 194 homes and 19 condos on the market in various price ranges. The median home value in Madison was \$403,200 with home prices having risen 2.4% over the past year.

The median list price per square foot in Madison is \$204 which is 37.0% higher than the New Haven Metro average of \$149 per square foot. The median price of homes in Madison currently listed for sale is \$497,000. These prices could be challenging for younger families with school age children, particularly those seeking starter homes to establish residence and raise families in the community.

In addition the Madison tax rate also imposes a burden that might be a deterrent for some families. Although mortgage rates are relatively low, tightened banking restrictions on credit and increasing down payment requirements may be forcing younger families to seek homes in other more affordable locations.

ANALYSIS OF DATA

Formulating long-range enrollment projections requires the development of a set of assumptions around which we build a statistical framework. We have developed a list of assumptions on birth rates, housing development, population, real estate and other factors we believe are essential to an accurate analysis.

MADISON ASSUMPTIONS

- 1) Birth rates have been projected based upon historic data provided by the Connecticut Dept. of Vital Statistics and the Town Clerk's Office through 2016. From 2017 forward, we have used an average birth rate (rolling average) based on the average of each of the previous five years.
- 2) Actual student enrollments from 2005-06 through 2016-17 have been provided by the Madison Schools and have been used as the basis for the cohort survival method of school population projection.
- 3) Information from the Madison Planning Director provided data on new and proposed construction in Madison from 2014 -2016 that indicates little residential growth.
- 4) We have reviewed the impact of Madison students attending private, parochial and other educational institutions.

METHODOLOGY

The most commonly used method for projecting student enrollments is a mathematical algorithm known as "cohort survival". This method of analysis takes the birth rate of a community, factors in the historic number of children that enter the public school system and tracks the number of students in the cohort as they progress through the various grades from kindergarten through grade 12. The percent of students in the cohort who historically "survive" from one grade to the next provides the basis of projecting future enrollments. Cohort survival ratios factor in historic enrollments assuming that other factors, i.e. births, in-migration, new housing starts, will remain the same.

The cohort survival algorithm creates a projection based only upon the historic past. It does not take into consideration outside elements and socio-economic factors that could affect student enrollments. To get a complete picture of what a community and school district will look like in the future additional data is factored into the projection and the foundation of data on which the projection is based is broadened.

Actual enrollment numbers show a decline in the student population from 3,834 students in the 2005-06 school year to 2886 students in the 2016-17 school year, a loss of 948 students or almost 25% of the total student body. Our projections show a continuing decline in enrollments to 2324 in 2027-28, a further drop of 454 students or 15.3%. **(Table IV)** The continuing decline in Madison's student population reflects a relatively stagnant birth rate due to an aging population, limited new development with few areas available for major housing development, a real estate market not priced attractively for younger families with school age children and a history of more students leaving the school system through graduation than entering in kindergarten or first grade.

When the number of births to Town residents and the number of children registering for Kindergarten five years later is compared **(Table V)**, there is a consistent pattern of more children enrolling in Madison's kindergarten than were born to residents of the Town. In 2010-11, based on actual enrollment figures, 5 more children or 3.8% enrolled in Madison's kindergarten than were born to residents. In the ensuing years that differential has grown to the point where the school department is showing substantially more enrollees in kindergarten than were born to town residents.. We project the number of children enrolling in Madison's kindergarten will remain in the +50% range. However, the number of children entering the Madison Schools in kindergarten and first grade are not enough to offset the number of students graduating from the system resulting in a continuing decline in overall enrollments.

Table IV
Madison Public Schools Enrollment Projection

Updated

Actual														
School Yr.	Kind	Gr. 1	Gr. 2	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
2005-06	253	258	278	295	289	317	324	317	312	310	333	279	269	3834
2006-07	208	273	271	290	300	304	333	328	321	310	303	326	271	3838
2007-08	206	237	276	273	295	293	307	322	323	324	300	294	319	3769
2008-09	200	246	239	285	277	297	296	313	326	340	310	289	291	3709
2009-10	167	230	256	234	289	285	302	296	312	329	330	317	288	3635
2010-11	135	188	245	255	246	288	300	310	306	321	326	337	306	3563
2011-12	143	163	192	256	255	254	287	292	313	311	302	318	329	3415
2012-13	147	176	167	203	259	269	264	294	297	314	311	312	319	3332
2013-14	154	162	178	182	208	267	279	268	292	308	311	320	313	3242
2014-15	134	172	168	190	189	213	275	286	267	309	300	304	316	3123
2015-16	139	150	182	175	191	203	213	276	280	271	294	301	298	2973
2016-17	153	148	160	186	184	206	208	214	273	288	273	294	299	2886

Projected														
School Yr.	Kind	Gr. 1	Gr. 2	Gr. 3	Gr. 4	Gr. 5	Gr. 6	Gr. 7	Gr. 8	Gr. 9	Gr. 10	Gr. 11	Gr. 12	Total
2017-18	142	171	156	167	192	195	210	210	211	282	281	271	290	2778
2018-19	144	165	177	163	172	203	199	212	207	218	276	279	267	2682
2019-20	142	170	168	185	168	182	207	201	209	214	213	274	275	2608
2020-21	140	156	179	175	191	178	185	209	199	216	209	212	270	2519
2021-22	145	154	164	180	180	202	181	187	206	206	211	208	209	2433
2022-23	142	160	162	171	182	199	206	183	185	213	201	210	205	2419
2023-24	140	155	168	169	176	185	203	208	181	191	208	200	207	2391
2024-25	143	150	166	173	174	186	188	205	206	187	187	207	197	2369
2025-26	141	153	158	172	183	184	189	191	201	213	183	186	204	2358
2026-27	142	151	161	165	178	186	187	191	189	207	208	182	184	2331
2027-28	143	155	159	168	170	186	188	189	189	187	203	207	180	2324

**Table IV
cont'd.**

Actual						
School Yr.	Gr K - 4	Gr. 5 - 8	Gr. 9 - 12	Total	# Diff	%Diff
2005-06	1373	1270	1191	3834		
2006-07	1342	1286	1210	3838	4	0.1%
2007-08	1287	1245	1237	3769	-69	-1.8%
2008-09	1247	1232	1230	3709	-60	-1.6%
2009-10	1176	1195	1264	3635	-74	-2.0%
2010-11	1069	1204	1290	3563	-72	-2.0%
2011-12	1009	1146	1260	3415	-148	-4.2%
2012-13	952	1124	1256	3332	-83	-2.4%
2013-14	884	1106	1252	3242	-90	-2.7%
2014-15	853	1041	1229	3123	-119	-3.7%
2015-16	837	972	1164	2973	-150	-4.8%
2016-17	831	901	1154	2886	-87	-2.9%
	Actual Students Lost 2005-06/2016-17				-948	-24.7%

Projected						
School Yr.	Gr K - 4	Gr. 5 - 8	Gr. 9 - 12	Total	# Diff	%Diff
2017-18	828	826	1124	2778	-108	-3.7%
2018-19	821	821	1040	2682	-96	-3.5%
2019-20	833	799	976	2608	-74	-2.8%
2020-21	841	771	907	2519	-89	-3.4%
2021-22	823	776	834	2433	-86	-3.4%
2022-23	817	773	829	2419	-14	-0.6%
2023-24	808	777	806	2391	-28	-1.2%
2024-25	806	785	778	2369	-22	-0.9%
2025-26	807	765	786	2358	-11	-0.5%
2026-27	797	753	781	2331	-27	-1.1%
2027-28	795	752	777	2324	-7	-0.3%
	Projected Students Lost 2017-18/2027-28				-454	-15.3%

Table V

Updated Births to Madison Residents vs. Kindergarten Enrollments

Birth Year	Births To Madison Residents	Kinder. Entry Year (5 yrs. after birth)	No. Kind. Students Enrolled		No. Kind. Students Enrolled Over Births	% Kind. Students Enrolled over Births
2024	90	2029-30	141	Projected	51	56.7%
2023	90	2028-29	141	Projected	51	56.7%
2022	89	2027-28	143	Projected	54	60.7%
2021	90	2026-27	142	Projected	52	57.8%
2020	90	2025-26	141	Projected	51	56.7%
2019	91	2024-25	143	Projected	52	57.1%
2018	89	2023-24	145	Projected	56	62.9%
2017	88	2022-23	144	Projected	56	63.6%
2016	91	2021-22	146	Projected	55	60.4%
2015	92	2020-21	144	Projected	52	56.5%
2014	93	2019-20	140	Projected	47	50.5%
2013	81	2018-19	131	Projected	50	61.7%
2012	82	2017-18	134	Projected	52	63.4%
2011	111	2016-17	153	Actual	42	37.8%
2010	86	2015-16	139	Actual	53	61.6%
2009	85	2014-15	134	Actual	49	57.6%
2008	104	2013-14	154	Actual	50	48.1%
2007	97	2012-13	147	Actual	50	51.5%
2006	128	2011-12	143	Actual	15	11.7%
2005	130	2010-11	135	Actual	5	3.8%

Notes:

- 1) Birth data from 2005-2013 from CT Dept. of Public Health Bureau of Vital Statistics
- 2) Birth data from 2014 - 2016 from Madison Town Clerk
- 3) Birth data from 2017-2025 estimated based on a five year rolling average
- 4) Actual kindergarten enrollment 2010-11 to 2016-17 from Madison Public Schools
- 5) Projected kindergarten enrollment from 2017-18 to 2029-30 from enrollment projections

Between 2017-18 and 2027-28 enrollments in the various grade configurations are projected to shrink at each grade level. Middle school and high school enrollments will continue to contract as smaller elementary enrollments work their way through the system. **Chart 1** shows the enrollment progression at each grade level from 2017-18 through 2027-28.

VOCATIONAL, PAROCHIAL & PRIVATE SCHOOL ENROLLMENTS

We reviewed parochial, private and other public school (technical, regional, magnet, vocational, SPED, and other) enrollments in relation to total school enrollments. **(Table VI)** Reviewing this data from 2006-07 to the present we sought to establish a trend in terms of students attending schools other than the Madison Public Schools. During this period the percentage of students attending Madison Public Schools averaged over 94.8% of total school children (not including those years for which complete data was not available). Our conclusion is that there is no significant loss of Madison students to other educational institutions nor do we anticipate any in future years.

The high quality of the Madison Public Schools encourages the large majority of Madison parents to enroll their children in the public school system. We anticipate enrollments in private, parochial and other schools will remain relatively stable for the foreseeable future with the percentage of students attending Madison Schools staying in the mid 90% bracket.

We have recently seen the closure of some parochial schools as churches seek to consolidate their educational facilities and reduce the drain on finances. There is no indication of that happening in the immediate future but there remains the possibility of some parochial facilities, (such as Shoreline Christian) closing which would have no more than minimal impact on Madison's schools.

Table VI

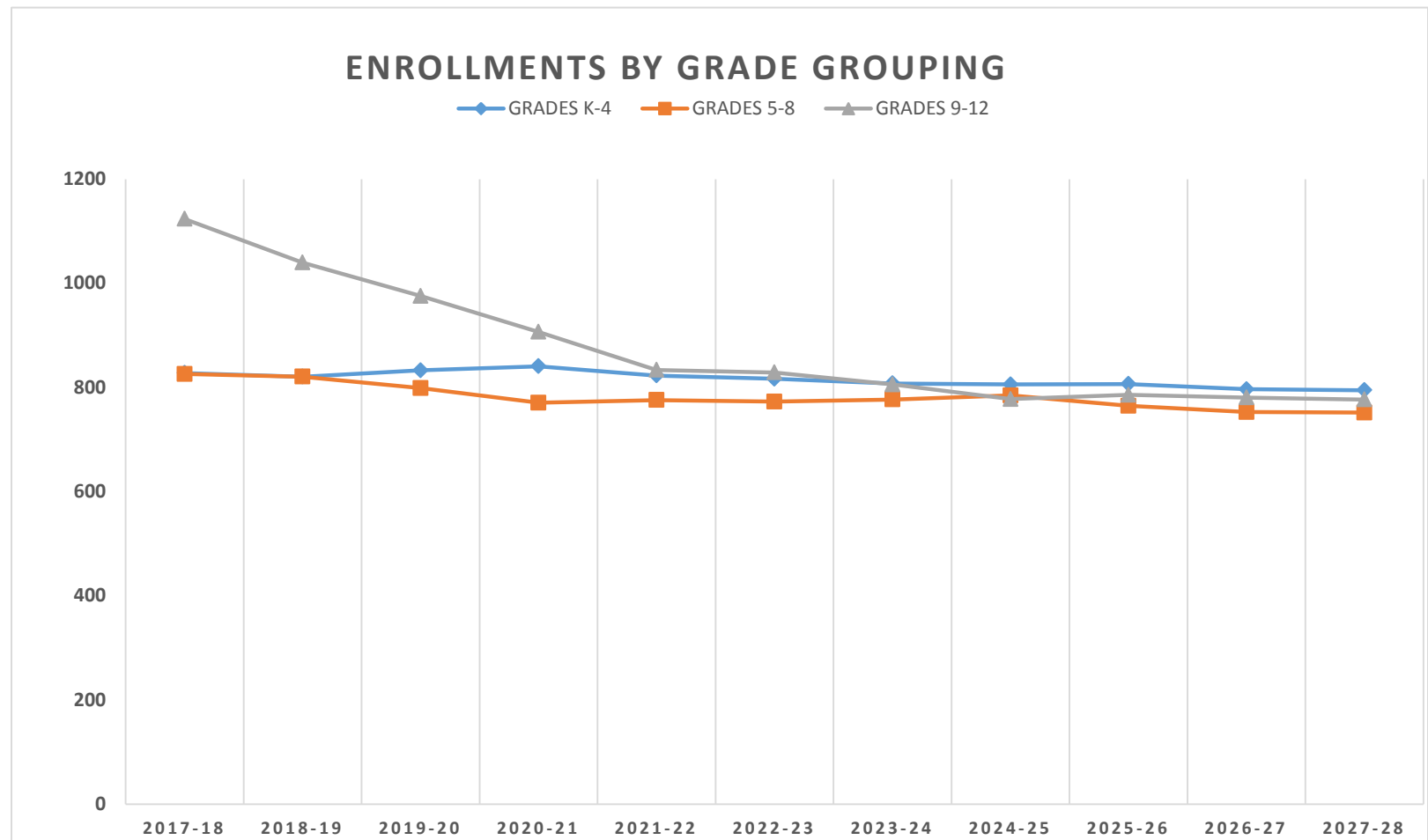
Updated

Other Schools Enrolling Madison Resident Students

School Year	Parochial Schools	Private Schools	Regional, Magnet, Vocational, Technical, SPED, other	Enrolled Madison Public Schools	Total Madison Students	% of Students Attending MPS
2016-17	No data supplied	No data supplied	21	2886	2907	Incomplete Data
2015-16	59	43	21	2973	3096	96.0%
2014-15	58	56	22	3123	3259	95.8%
2013-14	74	67	22	3242	3405	95.2%
2012-13	97	No data supplied	17	3332	3446	Incomplete Data
2011-12	No data supplied	No data supplied	21	3415	3436	Incomplete Data
2010-11	107	90	10	3563	3770	94.5%
2009-10	102	94	11	3635	3842	94.6%
2008-09	111	102	24	3709	3946	94.0%
2007-08	123	100	24	3769	4016	93.8%
2006-07	115	89	33	3838	4075	94.2%

- Notes:**
- 1) Data supplied by the Connecticut Department of Education and the Madison Public Schools
 - 2) PK enrollments not included in the data
 - 3) 2013-14 Shoreline Christian School closed

CHART 1



SUMMARY

Madison, with a strong and highly rated educational program, is a very attractive community for parents or prospective parents. Madison also provides a high standard of living which its residents are loathe to abandon. However, the limited ability to expand its housing and an aging population with a stagnant birth rate are leading to falling enrollment in the schools.

This projection is intended to put into perspective the space needs of the Madison Public Schools based upon enrollments, birth rates, in/out migration, new development and other relevant demographic data. In a projection of this type there are always unforeseen factors that cannot be anticipated. We have utilized the most recent information available. However, data, from which assumptions were derived and projections developed, may change. If the data on which we based our projections changes then the projections must also change. It is therefore recommended that future development in Madison, both social and economic, be closely monitored for significant shifts.

This document and the enrollments projected for specific years should be considered a guideline rather than a firm forecast and reviews of the enrollment projections should be done on a regular basis.

Despite the decline in the number of students in the Madison Schools, educators must be concerned with the condition of aging facilities and existing space; whether such space meets state standards and how space requirements will impact the quality of education and the ability of the schools to support a diversified and comprehensive educational program. The School Department is acting wisely as it examines its options to accommodate its school population.