

MMSD's Enrollment & Capacity Picture: A Perspective

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Introduction

Issue

The Madison Memorial School District (MMSD) is facing a significant challenge - growth. As a result of that growth - which is not evenly distributed across the district's region - some schools are facing, or will soon be facing, overcrowding. Other schools still continue to see languishing enrollment which calls into question the appropriate future use of their facilities.

Two task forces were created to examine these issues, and to recommend up to three options to address them. The task forces were also asked to develop options so as to reduce concentrations of low-income students. This report endeavors to examine how the enrollment picture plays out over the next five years, particularly under the various options proposed by the task forces. Special attention is given here to the West Side task force options due to this author's greater familiarity with them, and his continued maintenance of a model tracking their proposals.

This report first looks at the proposed options for the West & Memorial areas, and examines how projected enrollment and capacity compare over each of the next five school years. The report will then consider population projections over the next 25 years to try to get some sense of what one may expect as regards future demand for school facilities.

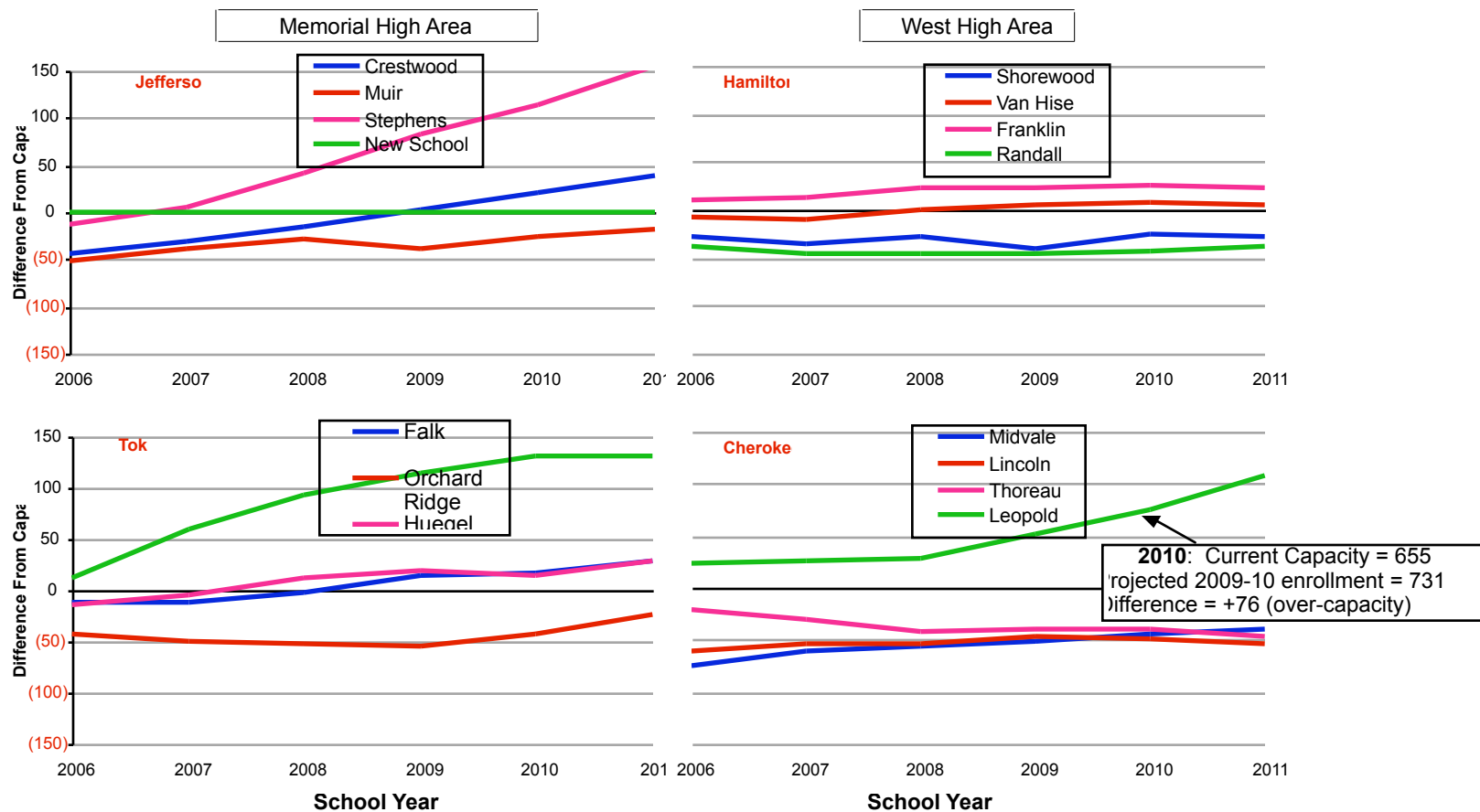
Disclosure, or why am I doing this?

- I recently moved to Madison and saw this issue as a way to get involved in the community and to understand "how things work" here.
- This particular issue is a complex problem, and therefore a rather interesting one to look at.
- I have two children attending MMSD schools, and therefore am especially interested in the well-being of this district, and community.
- Once I got started, it's been hard to stop (though my work and family demands have certainly constrained my efforts).

Capacity Constraints - Current Forecast

The charts below compare the MMSD's enrollment projections with current capacity, by school. They are sorted by middle school area. When, for example, it shows Leopold at +76 in 2010, it implies that current projections show that school being over-capacity by 76 students in the 2009-10 school year.

Current Projections



Modeling Impact of Proposed Options

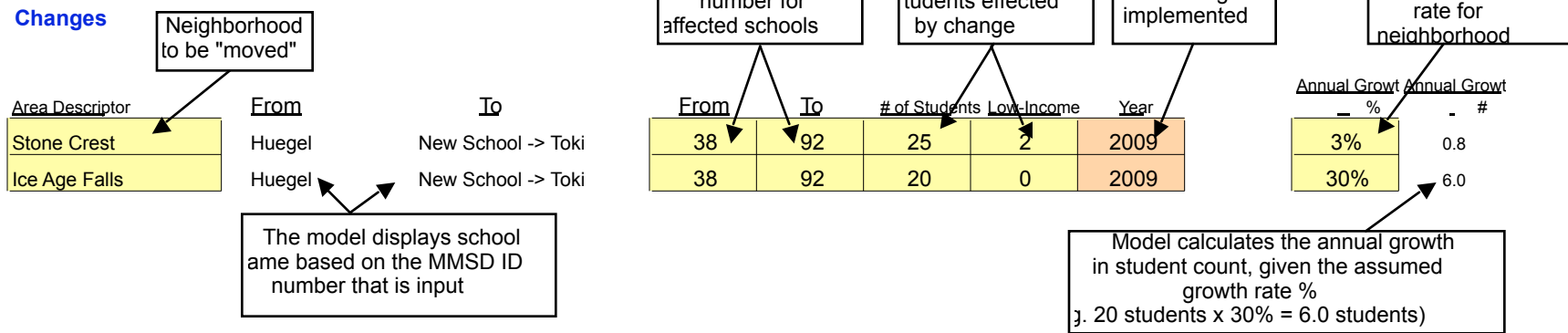
A model was developed to be able to determine how the MMSD's projections change, over time, for any given proposal from the task force. Simply, the model takes a proposed change (boundary change or capacity change) and "grows" the change based on the assumption regarding annual student enrollment growth for each specific proposed change.

In the example below, taken from the build-build Option 3a, two (of about 12) proposed boundary changes are shown. Color-shaded spaces are filled in by the model-user.

Step 1: Insert Change Assumptions

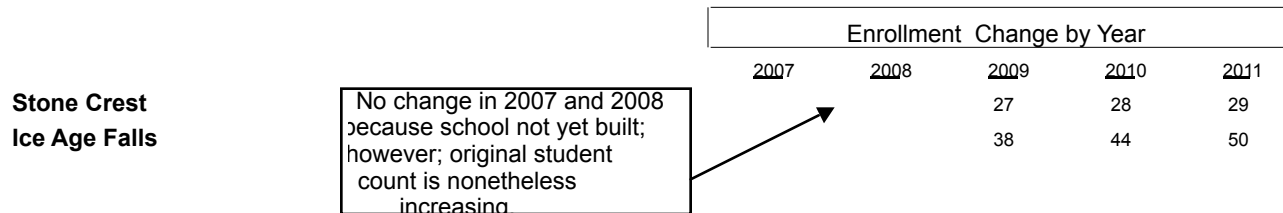
Proposed changes are inserted in a table, with each color-shaded cell requiring input.

Example: Option CP3a (focus on Huegel)



Step 2: Calculate impact of changes year-by-year

The annual growth is applied to the moved number of students to derive enrollment impacts each year:



Modeling Impact of Proposed Options

Step 3: Calculate changes at the school level

The results from Step 2 are summed to arrive at the impact of proposed changes on each school.

Enrollment Change by Year				
2007	2008	2009	2010	2011

Impact to Huegel - Changes Only

Stone Crest		(27)	(28)	(29)
Ice Age Falls		(38)	(44)	(50)
Huegel Total		(65)	(72)	(79)

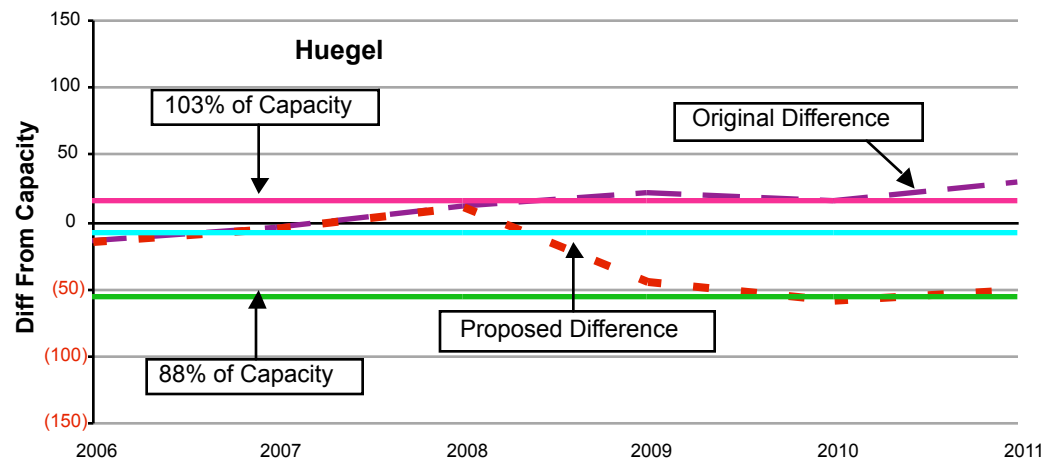
Step 4: Calculate each school's "Difference from Capacity" as a result of the proposed changes

The results from Step 3 are added to the original "Difference from Capacity" to arrive at a new total, for the proposed option.

Enrollment Change by Year				
2007	2008	2009	2010	2011

Impact to Huegel - New "Difference from Capacity"

Huegel - Option CP3a		(65)	(72)	(79)	
Huegel - Original Projected Difference from Capacity	(4)	11	20	14	29
Huegel - Proposed Difference from Capacity	(4)	11	(45)	(58)	(50)

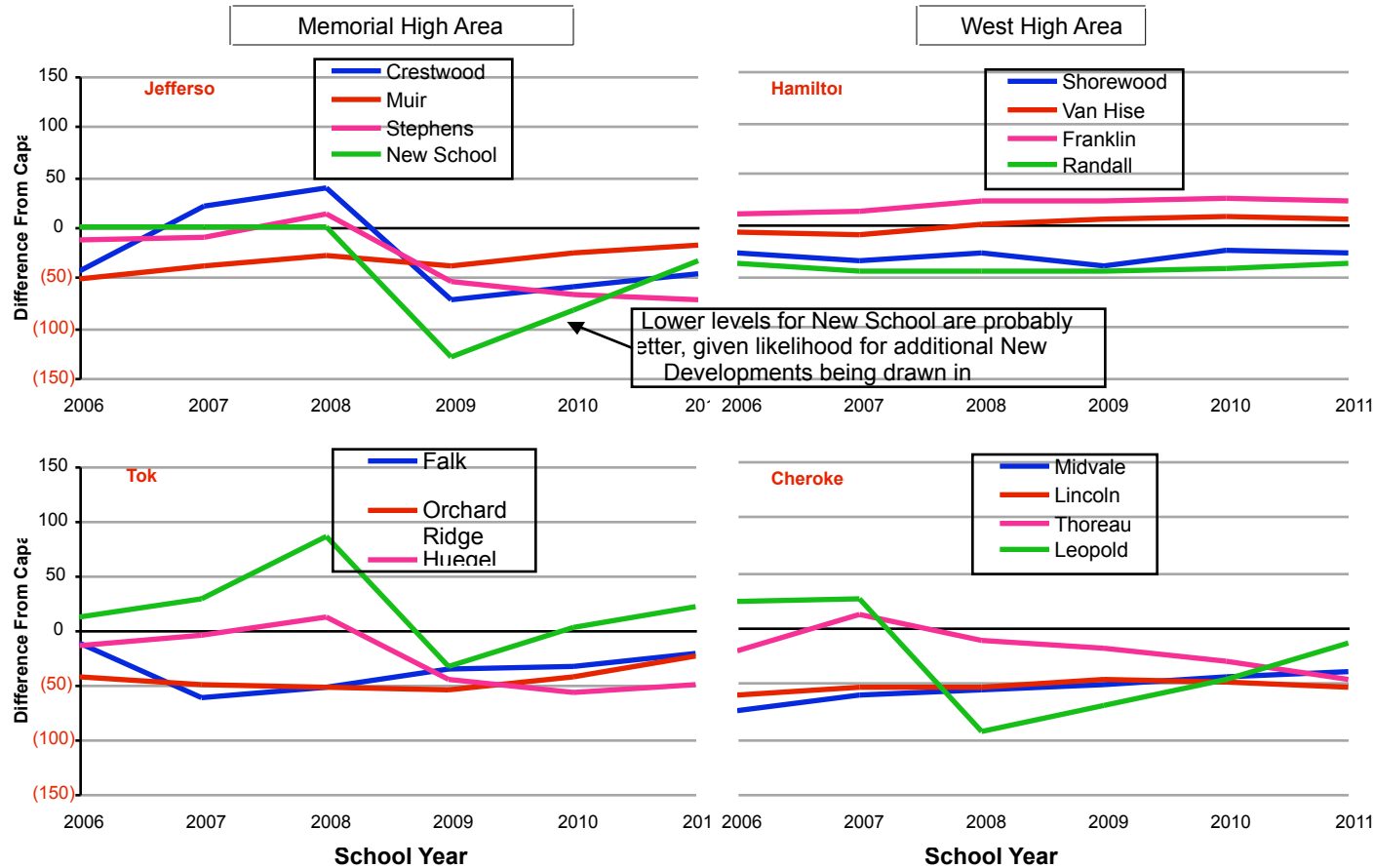


Modeling Impact of Proposed Options

West Side: Option 3a

The charts below show the estimated "Difference from Capacity" over the next five years, based on the original MMSD enrollment projections, and the changes proposed in Option CP3a.

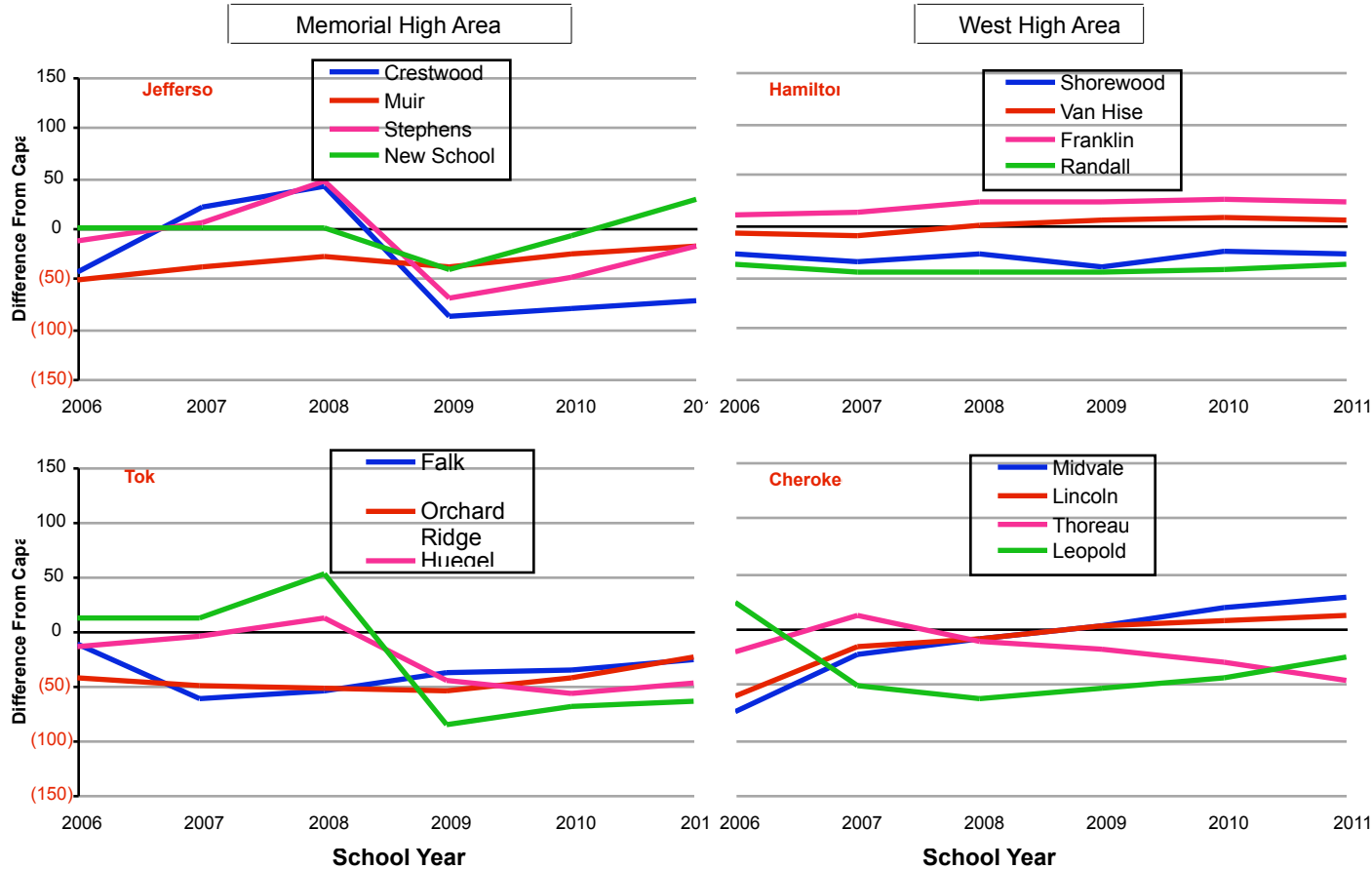
Option CP3a - Build New School; Leopold Addition



Modeling Impact of Proposed Options

The model here shows the impact of Option CP4 - New (LK) which does not include a Leopold addition, and aligns students consistent with the high school area in which they live.

Option CP4 New (LK) - Build New School; no Leopold Addition

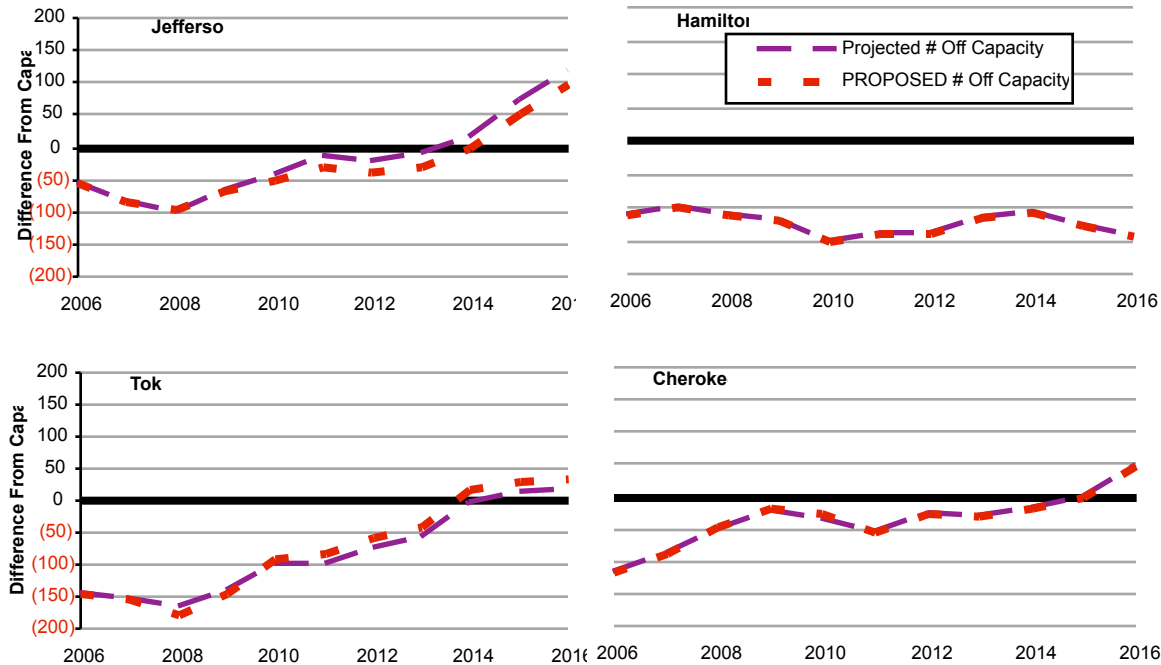


Note: All four Task Force options have been modeled, as well as the new version shown above. Options CP3a and 4 New LK have been shown here as example.

Modeling Impact of Proposed Options

The district used "cohort survival ratios" (rate of prior grades attending the subsequent grades, e.g. 6th graders as a % of 5th graders) to project enrollment in the area's middle schools. Those survival rates were extended out an additional five years to get an initial look at what middle school enrollment might look like over the next ten years. In the charts below, the original projection for each West Side middle school is shown, as well as how it is revised given the changes proposed by the task force.

Option CP3a - Build New School; Leopold Addition



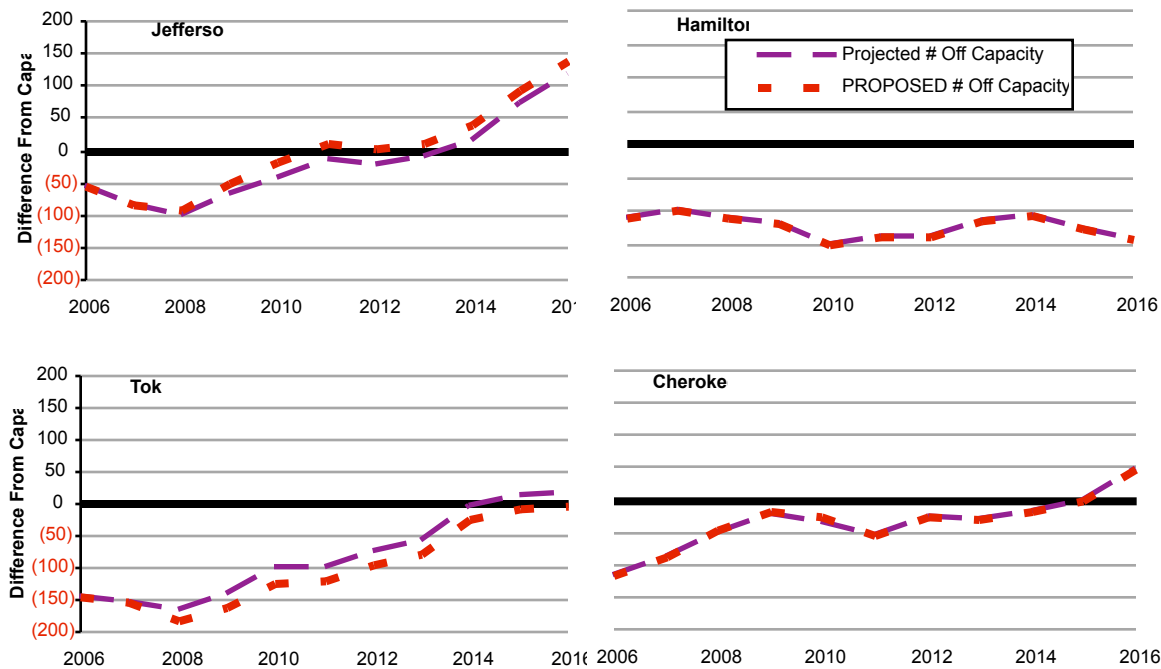
It should be emphasized this is a very simplistic method for projecting longer-term enrollment. The purpose here is to have just some rough idea of how the capacity picture might look.

Modeling Impact of Proposed Options

West Side: Middle Schools

The new Option 4 example shows the sensitivity of the middle schools to how students are aligned for the ensuing middle school. In this instance, more students have been assigned to continue at Jefferson once they graduate from the new elementary school.

Option CP4 New (LK) - Build New School; no Leopold Addition



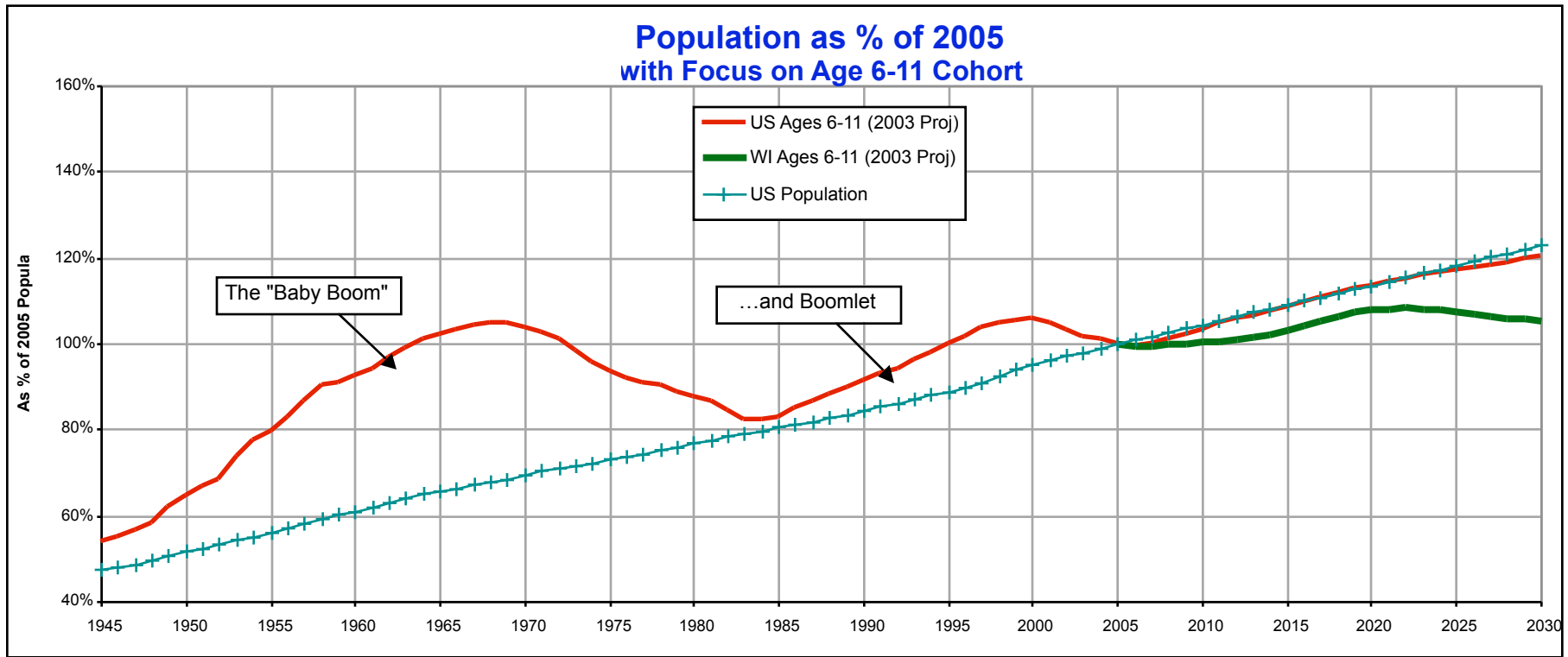
Long-Term Forecast

Methodology

The changes contemplated by the task force are significant, and permanent. New buildings will last for decades; boundary changes are very difficult to undo. Given the permanence of a new school, it seems advisory to try to obtain some sense of where enrollment in the MMSD might be 10-20+ years out. The following pages endeavor to do that, relying on US Census Bureau projections, by age group, through 2030 (as well as on local projections).

It is the author's hope that this analysis might be used as a starting point for arriving at a clearer vision of where MMSD elementary school enrollment might be over the next 20 years.

US population has increased steadily over the last 60 years, and is projected to continue to do so over the next few decades. However, the 6-11 age cohort has experienced a definite cycle reflecting the baby boom, and boomlet. It is noteworthy that, at least at the national level, the elementary school age group is about to bottom-out, and is soon expected to increase.



Source: U.S.Census Bureau, Population Division, Interim State Populat

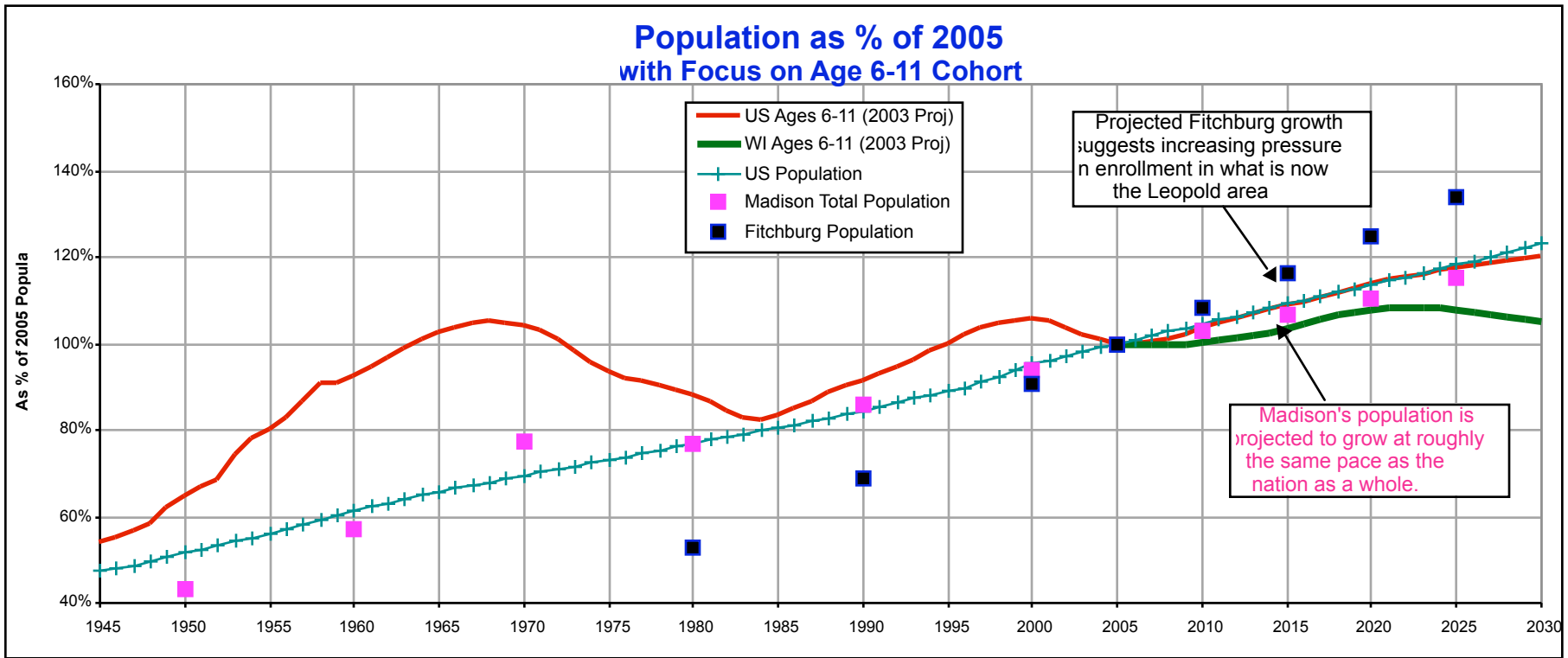
Note that all data displayed in this chart is as a percentage of 2005 values. All subsequent charts will continue this practice, permitting one to more easily compare population and enrollment trends.

2005 Values		
US Ages 6-11	23.6	million
WI Ages 6-11	434.3	thousand
US Population	295.5	million

Long-Term Forecast

Population

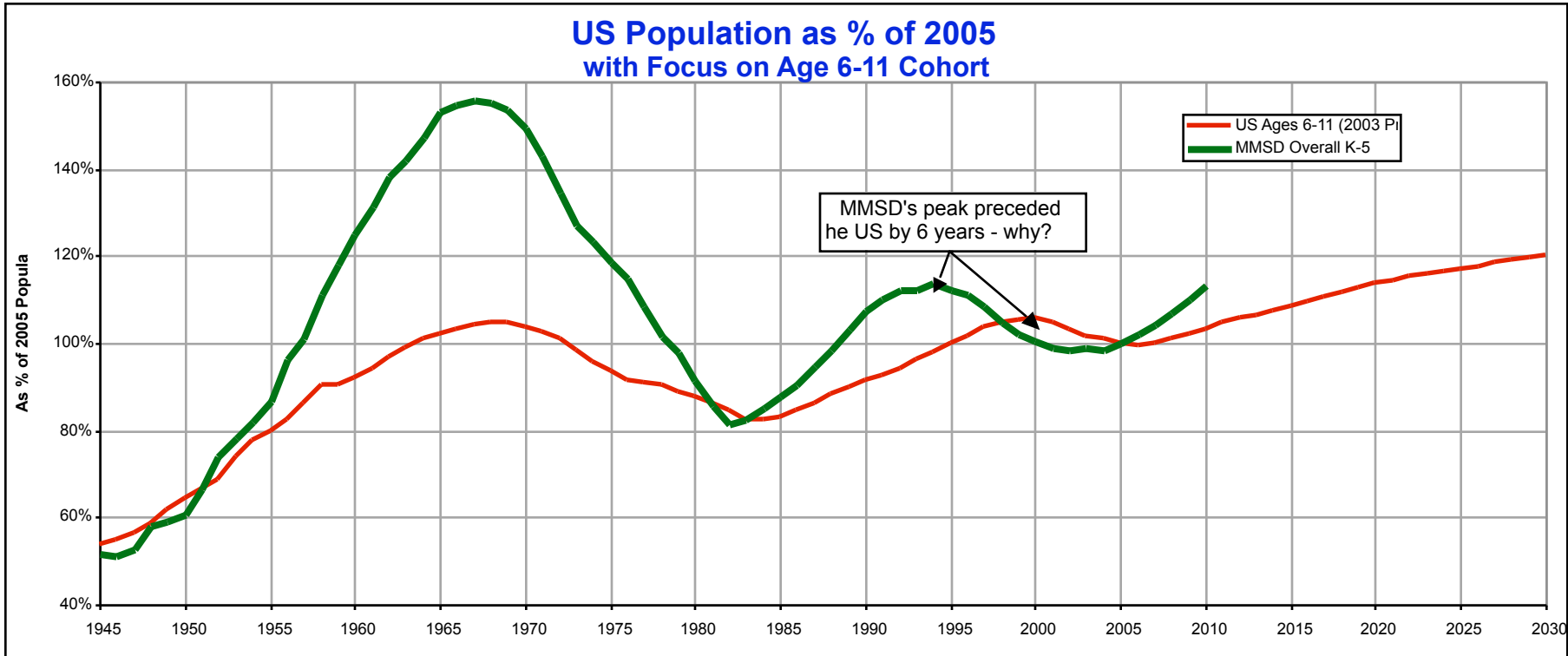
When we overlay Madison's population figures, we see it experienced rapid growth until the 1970's, and that it has recently grown consistent with the pace of the US. That pace is currently projected to continue for the next two decades. Fitchburg, on the other hand, is expected to remain growing at a much quicker pace.



Source: GreaterMadisonChamber.com/Documents/Population_Data_Sheet05.pdf (Dane County, Wisconsin Population Information)
 Source: Wisconsin Department of Administration (Final Population Projections for Wisconsin)

2005 Values		
US Ages 6-11	23.6	million
WI Ages 6-11	434.3	thousand
US Population	295.5	million
Madison Total Pop	221.7	thousand
Fitchburg Pop	22.7	thousand

Elementary school enrollment within the MMSD has undergone much more dramatic swings than the US experienced.



Source: Madison Memorial School District, various (adjusted for 1

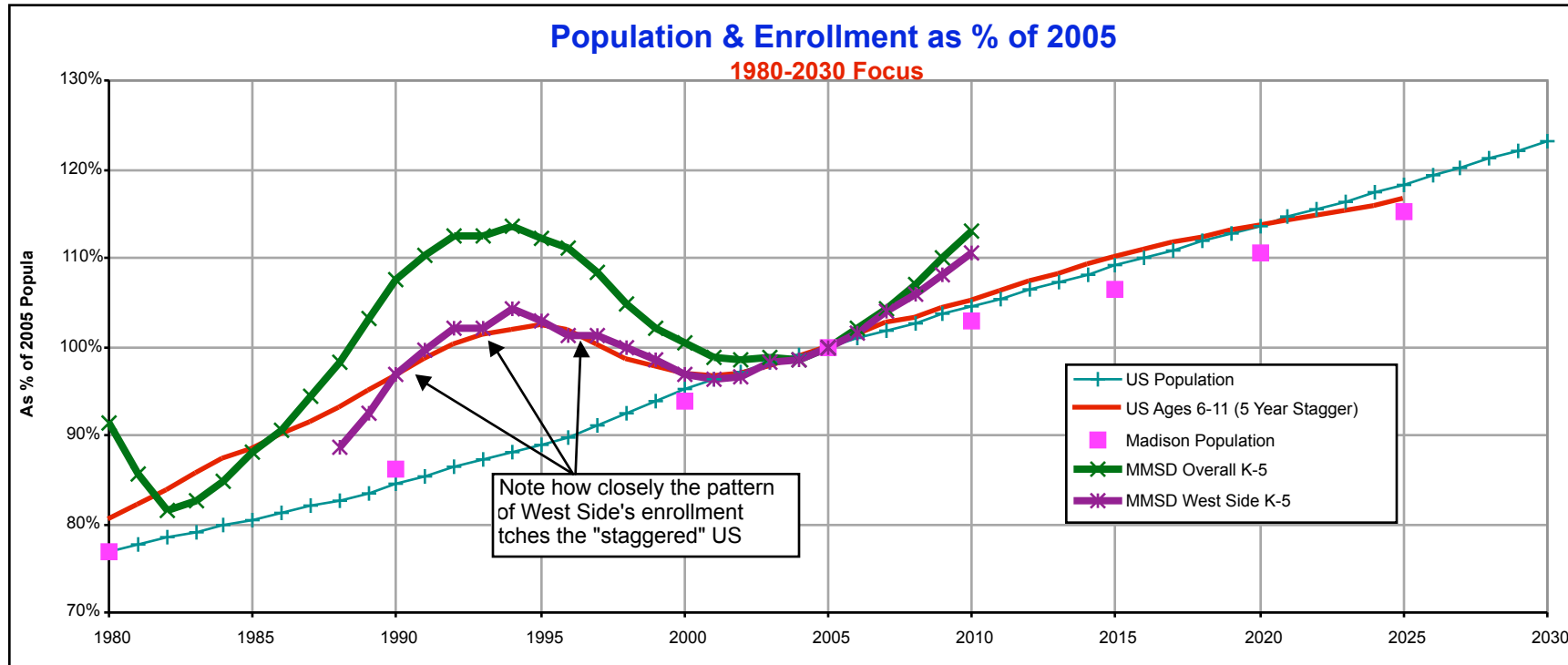
2005 Values		
US Ages 6-11	23.6	million
MMSD Overall K-5	10,879	students

Note that MMSD's peak and trough in 1967 and 1982 preceded the US by about two years; meanwhile, MMSD's next peak, in 1994, preceded the US by about six years.

Long-Term Forecast

MMSD Enrollment

If we "shift" the US 6-11 age group line back by five years, it has an extraordinary resemblance to the record of the K-5 enrollment in MMSD's West Side (West & Memorial), and to the general pattern for the MMSD overall.

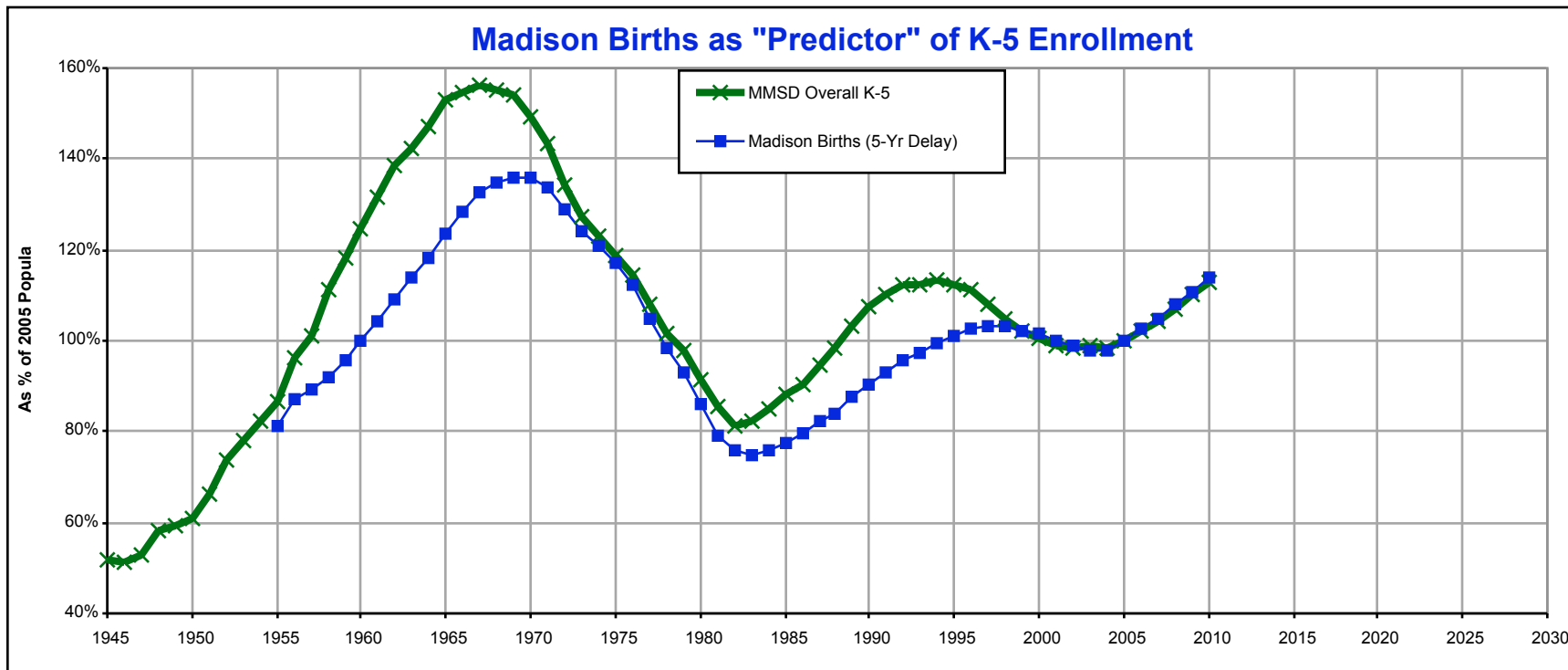


Source: Madison Memorial School Distr

At first glance, the projections for 2006-10 appear high, given the trends in the US 6-11 cohort, and the forecast that Madison's growth will roughly mirror the US. However, MMSD's historical pattern is that it's fluctuations consistently outpace that of the US as a whole. In that context, substantial enrollment increases seem justified. While the exact degree of increase may be unclear, there is strong evidence here that we can expect elementary school enrollment in the MMSD to continue growing for some time.

2005 Values		
US Population	295.5	million
US Ages 6-11 (5-Yr stag	24.4	million
Madison Total Pop	221.7	thousand
MMSD Overall K-5	10,879	students
MMSD West Side K-5	6,168	students

Madison birth trends are an important component in developing the MMSD enrollment projections. In the chart below, the Madison births are "real" numbers, not projections. To derive this line, births for the time period 5-10 years prior were summed. For example, the 2005 births value represented births between 1995-2000, as that was the time period during which present-day K-5 students were born.



Source: Madison Memorial School Distr
Source - State of Wisconsin Vital

2005 Values

MMSD Overall K-5	10,879	students
Madison Births (5-Yr Delay)	16,156	newborns
Current MMSD Students / Births Ratio:	67%	

Trends in Madison births, and MMSD enrollment have been fairly closely correlated over the years.

Conclusions

The following preliminary conclusions can be drawn from this analysis:

Elementary Schools

Some slight "tweaking" of the options may be warranted, particularly to address the near-term situation for Chavez.

Middle Schools

Jefferson & Toki are facing overcrowding risks in the next 5-10 years. In that light, particular attention will need to be given to the precise alignment of students attending a new school. If they are all aligned to attend only one of the middle schools, overcrowding will become an even greater risk.

Cherokee's longer-term situation appears all right, but that will definitely depend largely on the level of growth in the Fitchburg area.

Long-Term Outlook

The demographics and growth picture for Madison, and the country, suggest there will be continued increase in elementary school enrollment for some time. The projected increase in enrollment over the next five years does not appear to be a temporary phenomenon that will soon reverse itself.