

RESEARCH BRIEF

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Enrollment Projections 2004-2005

Purposes of Study

- Primary purpose: To provide a prediction for the total membership in 2004-05
 - Secondary purposes: To provide predictions for membership for each grade level in 2004-05
- Ancillary goals: to reevaluate the prediction methodologies and determine appropriate prediction procedures for current environment.*

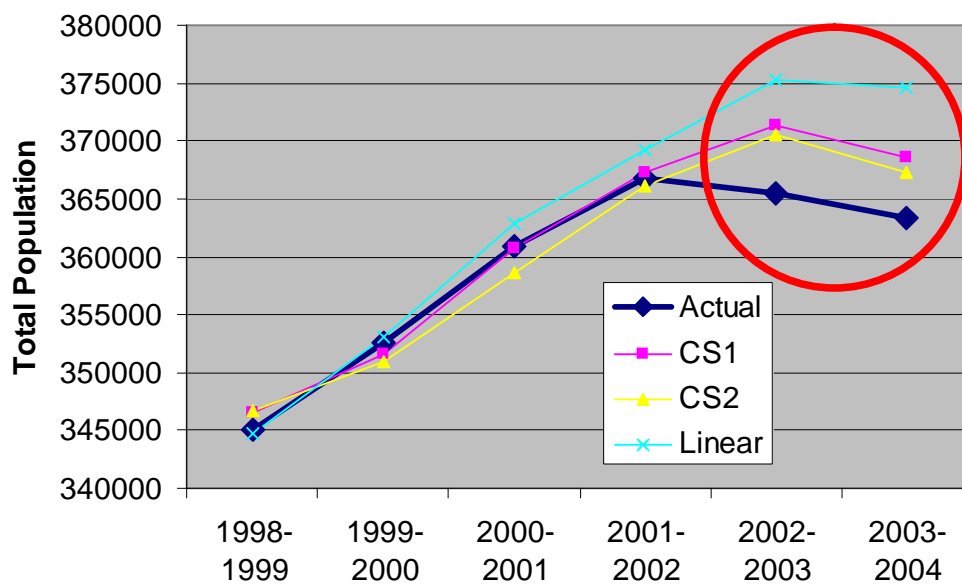
Review of Previous Prediction Accuracy

Previous projections used three methods: two cohort survival techniques (CS1 and CS2) and a regression approach (*Linear*). The graph below shows that for the last two years the projections by all three methods considerably overestimate the actual total enrollments. After many years of consistent overall population growth, total enrollment has declined for the past two years.

Assuming this tendency continues, any prediction based on trends including data prior to 2001-02 would continue to overestimate enrollment.

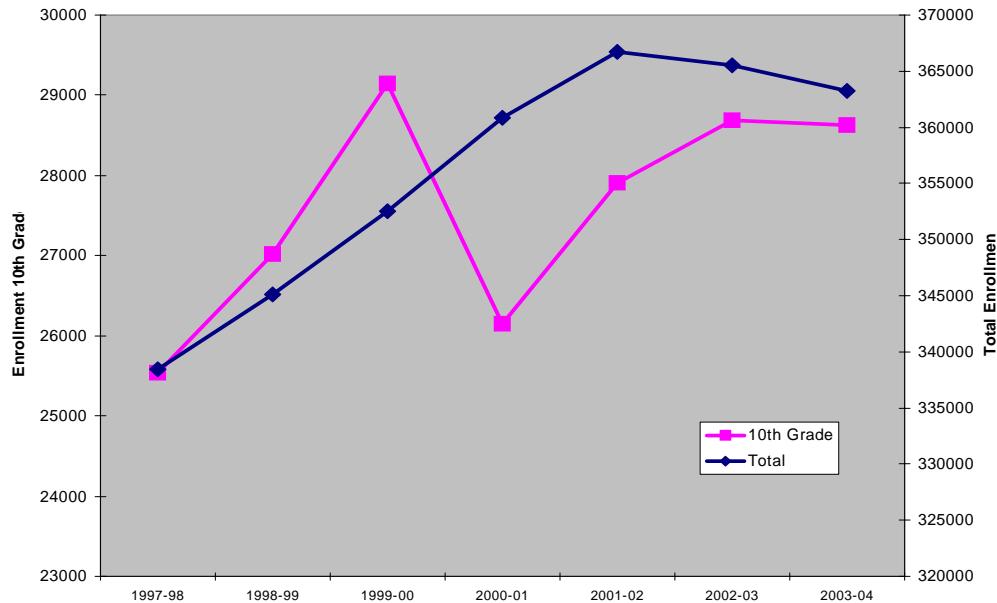
Conclusion: **Current methods should consider trend data only back to 2001-02.**

Comparing Projections to Actual Enrollments



Reliability versus Focus

In general, the more confined the focus of a prediction, the less reliable the prediction. In the present context, **the projection for total enrollment will be more reliable than the projections for each grade level.**



For example, the above graph superimposes the fluctuations of 10th grade enrollment over the total enrollment trend. The more erratic pattern in a single grade level makes the prediction for that grade level less trustworthy.

Retained Students

	2001-02	2002-03	Percent Increase
Grade 1	956	1681	176%
Grade 2	770	1496	194%
Grade 3	757	6622	875%
Grade 4	355	825	232%
Grade 5	177	344	194%
Grade 6	1054	2286	217%
Grade 7	1080	2804	260%
Grade 8	892	1752	196%
Grade 9	7209	7230	100%
Grade 10	3226	3812	118%
Grade 11	1950	1844	95%
	18426	30696	167%

Retention Rates

In the 2002-03 school year, for the first time, students in grade 3 who did not score at level 2 or higher on the FCAT Reading Test were retained at the 3rd grade level. Although there are various exceptions to this rule, the number of 3rd grade retainees rose sharply and unpredictably in 2002-03. In fact, as can be seen in the table, the levels of retainees increased in most other grades as well, although to a lesser extent. These kind of changes effect the cohort survival rates used in enrollment projections. For the purposes of this study, 3rd and 4th grade students are temporarily combined into one unit, projected using group cohort survival rates,

and then divided into separate grade projections based on the same 3rd and 4th grade proportions observed in 2002-03. The potential variations in retention rates for the coming year will contribute to the unreliability of grade-level projections.

Projection Methodology

Because the enrollments in 2001-02 exhibited considerable changes in direction from long-range trends, the historical data used for projecting enrollments will range no farther back than that year. While this limits the ability to infer consistent patterns, the inclusion of more distant data has contributed to overestimations for the last two years.

The methodology used for projecting enrollments for 2004-05 is a weighted cohort survival technique. Previous projections have utilized unweighted cohort survival and linear regression approaches. Because these methods have demonstrated less success in prediction, they were dropped from consideration this year. The weighted cohort survival method uses the proportion of increase or decrease in enrollment between any two grades (or between years for projecting Kindergarten and Pre-kindergarten enrollments).

For example, if 100 students enrolled in Grade 1 in 2002-03 increased to 104 in Grade 2 in 2003-04, the proportion of survival would have been 1.04. Such ratios are calculated between each pair of grades, over several recent years, and averaged, with later ratios receiving greater weight. The strength of the weighted cohort survival technique lies in the fact that each ratio encompasses collectively many of the variables that could possibly account for an increase or decrease in the size of a grade cohort as it moves on to the next grade. To project grade enrollments for 2004-05, the ratios thus determined are applied to the present enrollment statistics. Projected total enrollment is simply the sum of projected enrollments for each grade level.

Projected Enrollment 2004-05

The above methodology applied to current data yields the following projections for 2004-05 enrollment.

	2001-02	2002-03	2003-04	Projected 2004-05
Pre-K*	1936	1930	1950	1961
Kindergarten**	25411	25749	26418	25776
First	27286	26576	27295	27879
Second	28167	27374	26934	27569
Third	28629	28095	32028	31534
Fourth	28979	28209	22582	22234
Fifth	29364	28572	27867	27047
Sixth	30279	29409	29720	28628
Seventh	30051	30078	29848	29950
Eighth	29326	29759	29040	29065
Ninth	36095	36432	36843	35994
Tenth	27899	28688	28624	29059
Eleventh	23080	23888	23230	23622
Twelfth	20264	20733	20897	20504
Total	366766	365492	363276	360821

*Does not include non-FEFP PK enrollment.

**Based on birth data from 9/98 - 8/99 of 31,167 and a weighted survival rate to Kindergarten.

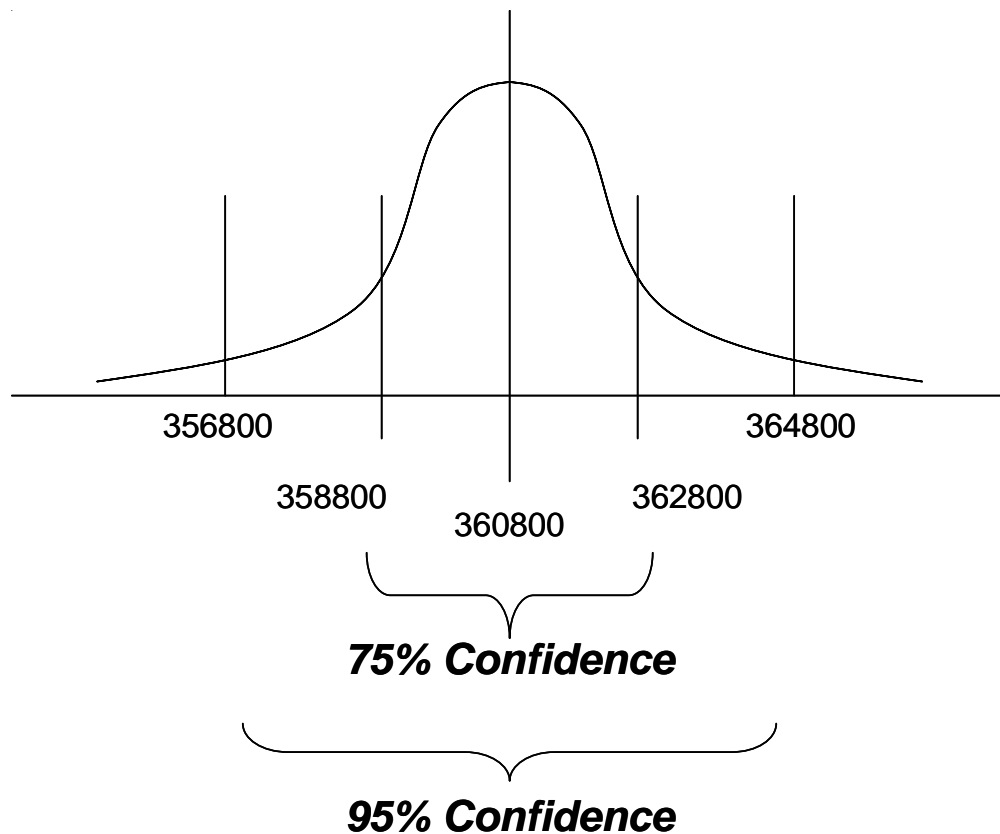
Confidence Bands

Although the projections are stated down to the level of single student counts, the precision of these projections is much less. With respect to the issue of precision, margins of error are not part of the cohort survival technique. However, standard errors of estimation are a normal by-product of linear regression techniques. Applying the regression approach to the prediction of total enrollment yields standard errors ranging from approximately 4000 to 400, depending upon the number of years of historical data included in the model. Using the rough average of these standard errors of 2000 gives rise to the situation depicted below.

A simple interpretation of the standard error of estimation is that it provides ranges of values for which we can assign approximate levels of confidence. Working with a standard error of 2000, we might say that:

- Our best guess for the total enrollment for 2004-05 is approximately 360,800 students.
- We can be 75 percent confident that the actual enrollment will be between one standard error on either side of this estimate, or between 358,800 and 362,800 students.
- We can be 95 percent confident that the actual enrollment will be between two standard errors on either side of this estimate, or between 356,800 and 364,800 students.

Whether these levels of precision are deemed weak or strong depends on the context of the use of these projections and the relative cost of error.



Other Factors

The projections provided in this report are almost wholly driven by the historical data. However, there are a great many external influences, mostly defying measurement, that can have profound effects on future enrollment. A listing of the potential areas of outside influence on enrollment would include, but is not limited to, the following: the Florida Legislature actions, changes in FDOE policies, the influence of Corporate Tax Scholarships, changes in immigration policy, economic contingencies, international political climates, and potential natural disasters. All of these influences, and more unanticipated issues, can have large-scale consequences on district enrollment figures. Consumers of these projections need to weigh these other factors to the extent possible when considering actions dependent on anticipated enrollment levels.