

# Texas Schools Projected to Lose 2.4 Million More Students Before Attrition is Tamed

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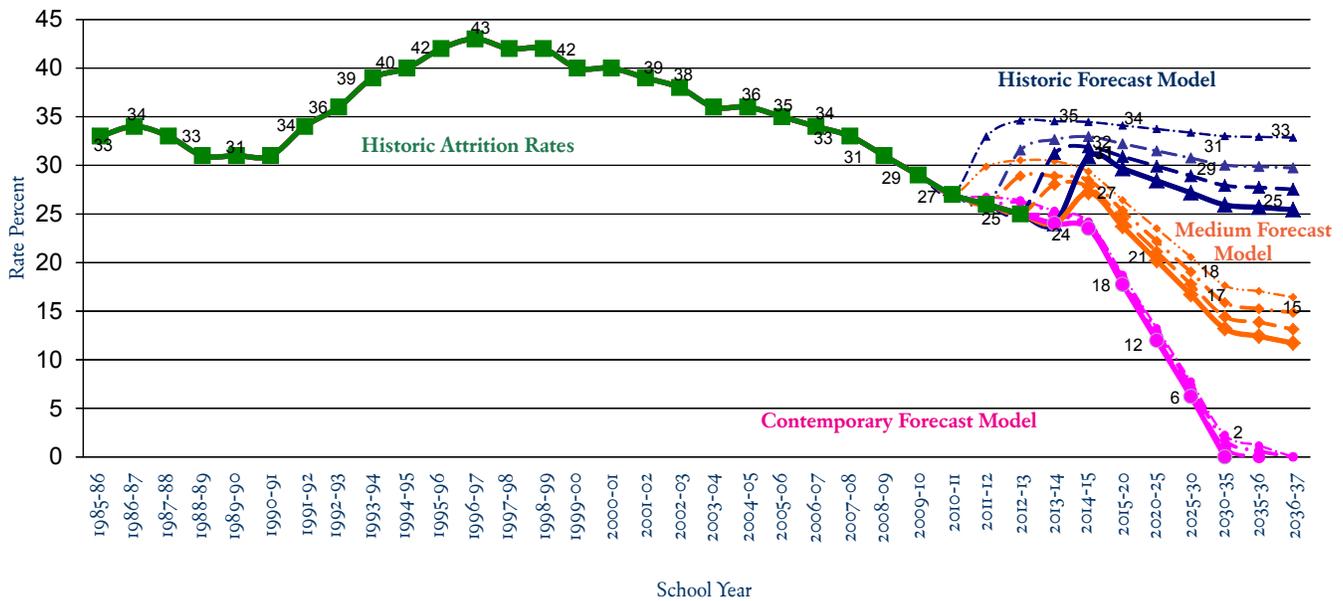
In the school year 1996-97, the attrition rate reached 43 percent – the highest value ever calculated by the attrition analysis IDRA performs on an annual basis. From that year to the present, the attrition rate has been declining by about one percentage point annually. This begged the question: When will the attrition rate reach zero? To answer this question, IDRA conducted a supplemental inquiry to the Texas high school attrition study. The inquiry used linear regression analyses to predict when the attrition rate will reach negligible values. This forecast analysis became a recurrent feature and each year is added to the full review IDRA devotes to this topic in October. This article represents this year's update to the forecasting analysis with the most recent attrition figures. IDRA's latest attrition study shows that the attrition rate continues to decline at the same glacial pace as the last few years, which continues to put the state more than 20 years away from reaching an

attrition rate of zero, according to the forecast analysis presented here.

The IDRA attrition study indicates that the attrition rate was 24 percent for the school year 2013-14, for which last year's forecast analysis had predicted a value between 25 percent and 31 percent. The actual attrition rate was one percentage point below the lower boundary of the predicted range. For the next 22 school years (2014-15 to 2036-37), the predicted attrition values are shown in the chart below, which first plots the attrition historic values (in green), followed by the forecasted values in the other colors.

The new prediction brings the zero attrition date forecasted one year closer from last year's prediction, from 2036 to 2035. This estimation improved from 2040 estimated in 2011 and 2044 in 2009. Nevertheless, although positive, the

## Actual and Forecasted Attrition Rates in Texas



Note: For convenience, the forecasted series are shown in five-year periods (2015-20, 2020-25, 2025-30, and 2030-35). This makes the curves more abrupt than they really are. If all values were included, the curves would be smoother, but it would be a much longer graphic. For the last few forecasted years, the axis reverts to annual values (2035 thru 2037) to more clearly show the distinctions between the models for those final years. Intercultural Development Research Association, 2014.

overall picture changed little, as evidenced by the similarity between the revised forecasting analyses, which present the forecast for next year (the heaviest lines) and the last three forecasted rounds (progressively lighter lines as time moves into the past).

### Forecasting Models

The forecasting analysis uses three models. The first model, called **Historic Forecast Model**, takes into account all known attrition values, from 1986 to the present, as determined by the annual IDRA longitudinal attrition study. This model assumes that each past rate has equal weight over future rates. For this model, all future attrition values within the model time horizon would be higher than the current value, since the model constructs the current downward trend as a cyclical bottom within the long-term progression of the curve. Therefore, it suggests that an upward reversal is overdue. In this formulation, for school year 2014-15, the attrition rate would increase to 31 percent and will remain at that level for the year 2015-16. After that, it would begin to decline initiating another downward trend. This model is depicted in blue in the chart.

The second model assumes that the downward trend that started in 1996-97 is a more reasonable predictor of future attrition values. The fact that these are chronologically the most recent values supports this assumption. The recent past is usually more relevant to the present than the distant past. Consequently, this **Contemporary Forecast Model** used the values corresponding to the school years 1996-97 to present, which represents the subsection of the historic series portraying the current downward trend. This model predicts a 24 percent attrition rate for

## Forecasted Students Lost to Attrition 2014-15 to 2034-35

Period	Historic	Medium	Contemporary
2014-19	594,851	504,834	414,817
2020-24	580,484	443,834	307,185
2025-29	572,372	385,297	198,223
2030-35	691,546	388,865	86,183
<b>Total</b>	<b>2,439,253</b>	<b>1,722,830</b>	<b>1,006,408</b>

Intercultural Development Research Association, 2014

school year 2014-15, which is the same as the current attrition rate. For the year after (2015-16), it predicts that the rate will decline to 22 percent. And after that, it will progressively decrease until it will reach zero in the school year 2034-35. This model is depicted in pink in the chart.

The third model takes a centrist view between the historic and contemporary forecast models. Mathematically, this **Medium Forecast Model** is formed applying the medians between the pairs of corresponding two model values within the models time horizon. Because of the strong influence of past history, this model predicts attrition rates to first increase slightly, and then to resume their downward trend in subsequent years. This model predicts an attrition rate of 27 percent for school year 2014-15, 26.5 percent for school year 2015-16, and progressively lower attrition rates thereafter. This model is depicted in orange in the chart.

These models should not be understood as competing or alternative approaches; rather,

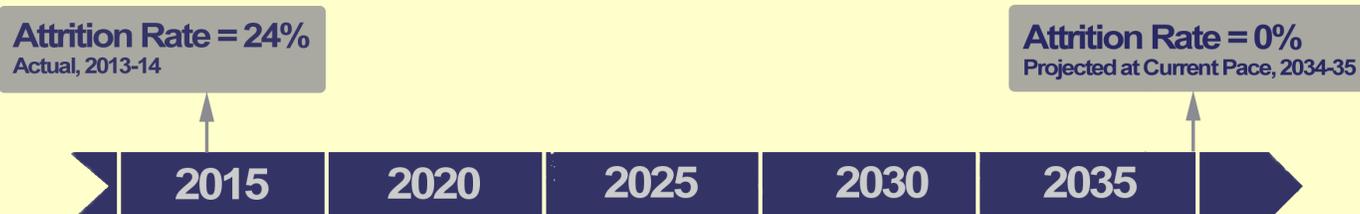
## Forecasted Model Values and Residuals, 2008-09 to 2014-15

School Year	Attrition Rate	Historic Model		Medium Model		Contemporary Model		Year Rate Will Be Zero
		Values	Residuals	Values	Residuals	Values	Residuals	
2008-09	31	37	6	34	3	32	1	2044
2009-10	29	36	7	33	4	31	2	2042
2010-11	27	34	7	32	5	29	2	2040
2011-12	26	33	7	30	4	27	1	3037
2012-13	25	32	7	29	4	26	1	2037
2013-14	24	31	7	28	4	25	1	2036
2014-15	N/A	31	N/A	28	N/A	25	N/A	2036

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# Universal high school education is at least a quarter of a century away

Texas stands to lose another 2.4 million students.



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they complement each other. The contemporary model is more useful for short-term predictions, such as estimating the attrition rates for the next few years. The historic model provides a more long-term view. Absent of some fundamental changes, history tends to repeat itself. The medium model is useful for medium-term predictions and tries to bridge the gap between the contemporary and the historic models. Since time in the long-term future is difficult to visualize, the medium forecast model might provide a more practical reference for planning purposes.

### Best Fit

The exhibit on Page 19 shows the performance of the three models throughout their seven years application. For each model, its forecasted values and residuals – the difference between the forecasted and the actual values – are listed for each school year. The smallest residuals correspond to the model that best fits the data so far. It is clear that the contemporary model, with residuals of 1's and 2's is the model that best fits the data. For this reason, this model was used to forecast the year when the attrition rate will be expected to reach zero, listed in the last column of the exhibit.

The most current forecasting indicates that 2035 will be the year when attrition will reach zero. The contemporary model also indicates that the attrition rate will reach single digits in the late 2020s and will progressively decrease to negligible values from there. Thus, we are still about 20 years away from achieving a zero attrition rate, at the current pace of improvement, with many children lost in the intervening time – the topic for the next section. In addition, it is essential to keep in mind that the contemporary model is the best fit for now. Since there isn't a clearly discernible cause for a sustained attrition

decrease over time, the current trend might prove to be cyclical, as the other models suggest.

### Forecasted Student Losses

To understand the severity of the situation, we used the updated three forecast models to estimate the number of students that will be lost to attrition before the contemporary model predicted rate reaches zero (see table on Page 19).

The historic forecast model predicts that more than 2.43 million students will be lost to attrition from the 2014-15 to 2034-35 school years. The contemporary model yielded a figure of more than 1 million, and the medium forecast model more than 1.72 million.

### Conclusions

- If we take the full historic values as a guide, the student dropout rate should be expected to continue to increase for the next few years and then remain between 26 percent and 29 percent for the foreseeable future. Under this scenario more than 2.43 million additional students will be lost to attrition by the year 2035.
- If we assume that the current downward trend is real – the result of systemic changes – the attrition rate will reach single digit values in the late 2020s. By 2030, the attrition rate will be about 6 percent, and it will reach zero in the year 2035. However, from now to that point, we would have lost more than 1 million students to attrition.
- Over the long to medium term, a more realistic model suggests that the current attrition rate will increase to 27.2 percent before resuming its downward trend. In this scenario, by the year 2035, attrition will still be at about 13 percent, and during the period 2014 to 2035, we would have lost more than 1.72 million students.

Therefore, we should expect high attrition rates, in the range of 24 to 27, for the next few years. We should also expect to lose between 1 million and 1.72 million additional students to attrition before we reach a zero attrition rate, forecasted under the most optimistic scenario, unless this issue is considered seriously by policymakers and systemic changes are implemented to ameliorate the problem.