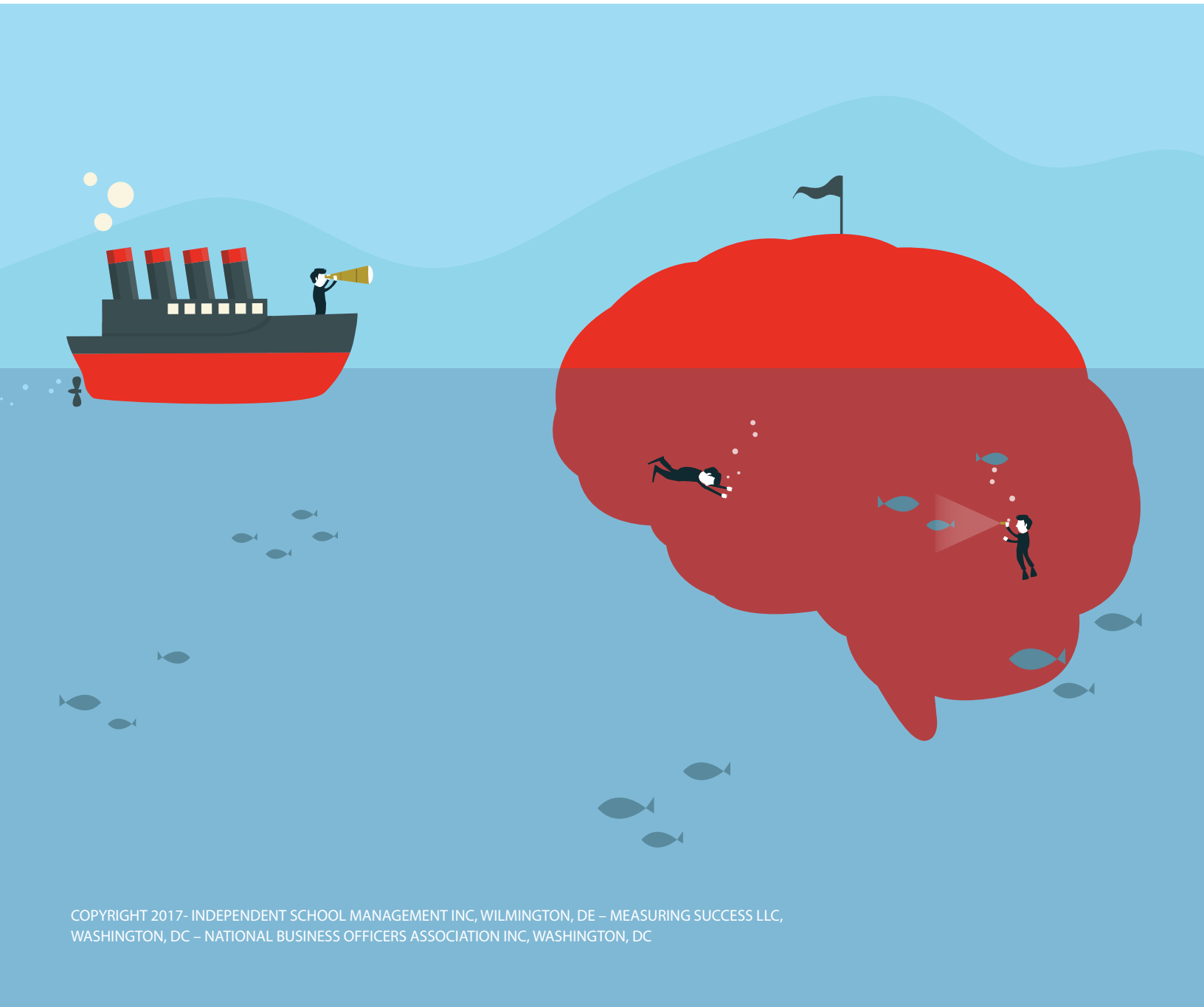
Effects of **Tuition Increases** on **Enrollment Demand:**

an updated study by **ISM, Measuring Success**, and **NBOA**

FEBRUARY 2017



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Contents

Do Tuition Increases Adversely Affect Enrollment? 3

Findings 5

A Deeper Look 8

The Admission Funnel 9

Expansive Examination 9

Select Circumstances Where There Was a Relationship – But Cost-Benefit Does Not Pay Off 12

High Tuition Versus Low Tuition 13

Financial Aid 14

Small Schools 15

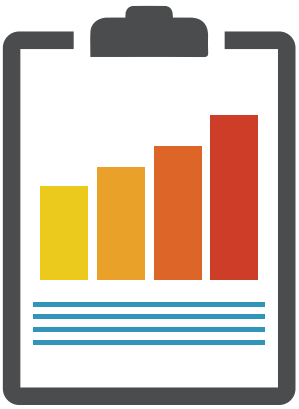
Conclusion 16

Do tuition increases adversely affect enrollment? It's an important question. Administrative leaders and board members must deeply consider the relationship between these two variables to make confident decisions.

Independent School Management (ISM), Measuring Success, and the National Business Officers Association (NBOA) have harnessed the power of collaboration to renew a study and methodology originally undertaken in 2006 by Measuring Success and repeated in 2011 by Measuring Success with ISM. These studies, conducted right before and after the Great Recession, suggested that there was no relationship between tuition increases and enrollment; this has been a help to many schools. Some schools, however, were concerned that the results of these studies did not examine the nuanced measures of enrollment, did not sufficiently reflect their individual circumstances, or that after five years since the last study, the market had changed. To continue to address this important question, three leading organizations have worked together to expand the number and type of schools participating in a research-based study that once again addresses the important question, "Is there a relationship between enrollment in an independent school and changes in tuition?" We do not expect this study to put the debate to bed; however, we do believe that data-driven instead of anecdotal decision making is crucial if we are to grow both the enrollment and financial sustainability of our schools.

The 2016 study improves on the previous studies in numerous ways:

- We expanded the enrollment outcomes from lagging to leading metrics. We had historically measured percent changes in total enrollment and attrition by division. This year, we drilled into key entry point grades – for elementary school, most often kindergarten and for high school, most often ninth grade – to track shifts in the admission funnel such as applications, selectivity, yield and students offered financial aid. Our justification was that these "leading indicators" will be the first to reflect a shift in market demand due to price increases. By contrast, changes in enrollment and attrition by division tend to be "lagging" because they reflect the decisions of families already in the school – and these families are less sensitive to price shifts once they are already in the school as opposed to families who are still prospects.



- Measuring Success made our time-series (longitudinal) regression analysis more robust analytically including step-wise regression and interaction variables to understand collinearity between variables. We also took into account more hypotheses of what might drive enrollment, including more institutional health measures from audited financials and selectivity (the percent age of applicants admitted to the school).

- Thanks to NBOA's involvement, significantly more schools — 259 schools this year, up from 140 in 2011 — participated. Schools of all types, tuitions, grade levels, sizes, locations, and affiliations, all North American, submitted data for each of the last six years. This allowed us to explore the relationship between tuition and enrollment changes for subsets of schools – big and small schools, high price and low price schools, K-8s and high schools only.

- Factors outside a school's control were also expanded thanks to ISM's identification of potential holes. As in the last study, the region of the country and locale (metropolitan, urban, suburban, and rural), average income for each school's zip code, and changes in median house values were accounted for. In this study, we also examined concerns ISM had around the effects of birth rate and the strength of public school districts in which the independent school was located.

- This study conducted 46 different regressions (previously 17 regressions were conducted).

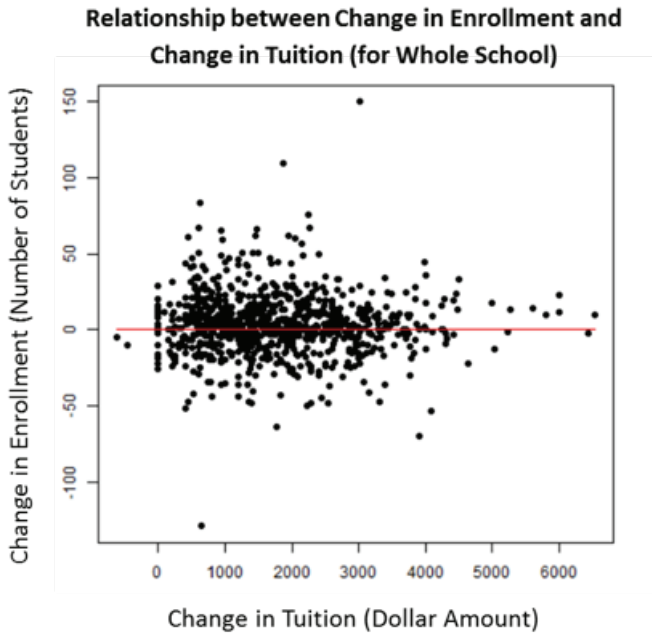
- Schools were examined by division (lower, middle, upper) and by the whole school. Tuition shifts were, similar to the previous studies, considered by whole dollar changes, percentage year-to-year changes, and the compound annual growth rate over the past six years.

- The timing of this study, conducted in the aftermath of the Great Recession and the more recent years of economic growth, gives us the opportunity to understand the economy's impact on schools' enrollment.

Findings

In 2006 and 2011, we found no relationship between changes in tuition and subsequent changes in enrollment despite strong anecdotal evidence to the contrary. Our data-driven analytical philosophy has always been to assume that there is a relationship between changes in tuition and enrollment demand until proven otherwise. As noted above, Measuring Success conducted three times the number of regressions (thanks to an expanded set of outcome variables) to identify a relationship between price shifts and enrollment changes. In 98 percent of the regressions we conducted, there was absolutely no effect identified, reaffirming what we had found in 2006 and 2011. And in those cases (explored later in the paper) where there was an effect, it was small, and a cost-benefit analysis showed that any small enrollment improvement in enrollment was outweighed by the decrease in net tuition revenue collected, thus weakening the school's financial sustainability. As we examine the data, it is an important reminder that the regressions examine the trend across independent schools; your school's experience may have been different. But remember that the human mind tends to ascribe causality where there is no relationship. So, if your school is one of the outliers where flat tuition and enrollment increases coincided, it is more than likely that is just a chance association – because for every school that held tuition constant and saw enrollment increase, there was another similar school that held tuition constant but saw enrollment drop.

The vertical axis represents enrollment changes, and the horizontal axis represents tuition changes. The line of best fit is flat. While we show a simple scatter plot, we conducted a sophisticated time-series regression controlling for many factors both in and outside a school's control to see if we could explain what drove enrollment change. If there were a relationship between these two variables, the line of best fit would be at an angle to indicate a positive or negative relationship. Therefore, the data suggests results that are consistent with previous studies: enrollment and changes in tuition share no significant relationship. To further test our hypothesis, we analyzed this data across all divisions, and across whole dollar and percentage dollar changes. All regressions reflected similar results: the line of best fit was flat.



These findings are, once again, good news for independent schools. Increasing tuition to expand programs and offer higher salaries to teachers are frequent primary strategic initiatives for independent schools. And overall, the practice that tuition drives quality should continue to influence our tuition decisions. There is an understandable concern that increasing tuition to enhance the quality of the program could drive families away. However, this study suggests that, overall, the fear is just that, fear, and that schools can increase tuition concommitant with perceived quality and expect enrollments to remain at least constant. As we have argued in the past, perceived quality of the school is what is actually driving enrollment, and should be determinant of a school's ability to raise tuition. If a school's perceived quality is strong, it can justify tuition increases. But because tuition is idiosyncratically set by school boards, and many schools do not understand their perceived quality in the marketplace, some schools will find that tuition increases will be met with enrollment drops, or even that flat or decreased tuition will not stop enrollment from falling off.

A Deeper Look

The Admission Funnel

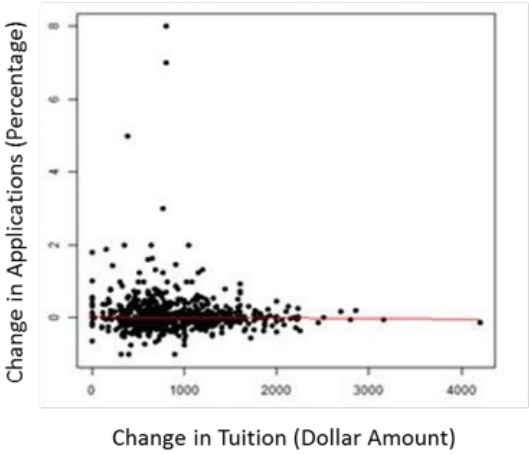
Many schools appropriately challenged the validity of examining the effects of tuition change on demand by looking at enrollment changes or attrition changes because those reflect primarily the decision of families who have already chosen the school, and customer retention is always easier and less price sensitive than new customer acquisition. To test this, we explored leading indicators in the admission funnel for key entry point grades. The logic was that the admission funnel would be the most sensitive to shifts in tuition.

The data suggests interesting findings. Increased tuition has no effect from one year to the next on

- Retention rates from one division to the next (for instance, the percentage of preschool fami lies who enrolled in kindergarten)
- The number of applications for the lower or middle/upper school entry grade
- The yield – the percentage of accepted students who chose to matriculate

The chart below represents the percentage change in applications to middle school or upper school entry point grades by change in tuition. Again, the line of best fit is flat, indicating no perceivable relationship. Importantly, we took into account the selectivity of a school – the percentage of applicants who were accepted – meaning that this lack of relationship was true even for more or less selective schools.

Relationship between Change in Applications and Change in Tuition for Middle or Upper School Entry Point



Expansive Examination

Below are all the regressions conducted in which we did not find any evidence of a relationship between tuition changes and enrollment changes. "New" indicates explorations we had not conducted in 2011.

Outcome: Enrollment

- Time series regressions on enrollment
  - o Whole school: dollar change in tuition versus percent change in enrollment
  - o Whole school: dollar change in tuition versus number change in enrollment
  - o Whole school: percent change in tuition versus number change in enrollment
  - o Whole school: percent change in tuition versus percent change in enrollment
  - o Lower school: dollar change in tuition versus percent change in enrollment
  - o Middle school: dollar change in tuition versus percent change in enrollment

- o Upper school: dollar change in tuition versus percent change in enrollment
- New time series regressions on enrollment for subsets of schools
  - o Whole school: dollar change in tuition versus percent change in enrollment
    - Price
      - Under $15,000
      - Over $25,000
    - Boarding versus day
      - Boarding schools only
      - Day schools (non-boarding) only
    - Divisions operated
      - K-8 only
      - Middle and upper schools only
      - Preschool-12th grade
      - K-12th grade
    - School size
      - Fewer than 300 students
      - Over 1,000 students
- Non-time series regressions on enrollment
  - o Whole school: percent tuition versus percent enrollment 2010-2013
  - o Whole school: percent tuition versus percent enrollment 2013-2016
  - o Whole school: percent tuition versus percent enrollment 2010-2016
  - o Pairs of years: dollars tuition versus percent enrollment
    - 2010-2011 versus 2011-2012
    - 2011-2012 versus 2012-2013
    - 2012-2013 versus 2013-2014
    - 2013-2014 versus 2014-2015
    - 2014-2015 versus 2015-2016

New outcome: Retention from one division to the next

- Dollar change in tuition for lower school entry point versus absolute change in retention rate from preschool to lower school
- Dollar change in tuition for lower school entry point versus percent change in retention rate from preschool to lower school
- Dollar change in tuition for middle/upper school entry point versus absolute change in retention rate from middle to upper school (or lower to middle school)
- Dollar change in tuition for middle/upper school entry point versus percent change in retention rate from middle to upper school (or lower to middle school)
- Repeated the above four regressions controlling for the selectivity (percentage of applicants admitted) of the division into which students were entering

New outcome: Applications

- Dollar change in tuition for lower school entry point versus percent change in applications for lower school entry point
- Dollar change in tuition for middle/upper school entry point versus percent change in applications for middle/upper school entry point
- Repeated the above two regressions with selectivity of entry point grade included

New outcome: Yield

- Dollar change in tuition for lower school versus absolute change in lower school yield rate
- Dollar change in tuition for middle/upper school versus difference in middle/upper school yield rate
- Repeated the above two regressions with selectivity of entry point grade included

New outcome: Financial Aid (which previously was only a predictor variable)

- Dollar change in tuition for lower school versus absolute change in percentage of students awarded financial aid in entire lower school
- Dollar change in tuition for middle school versus absolute change in percentage of students awarded financial aid in middle school
- Dollar change in tuition for upper school versus absolute change in percentage of students awarded financial aid in upper school
- Dollar change in tuition for lower school versus absolute change in percentage of students awarded financial aid in lower school entry point grade
- Dollar change in tuition for middle/upper school versus absolute change in percentage of students awarded financial aid in middle/upper school entry point grade
- Ran the above regressions with selectivity of entry point grade as well

Select Circumstances Where There Was a Relationship – But Cost-Benefit Does Not Pay Off

High Tuition Versus Low Tuition

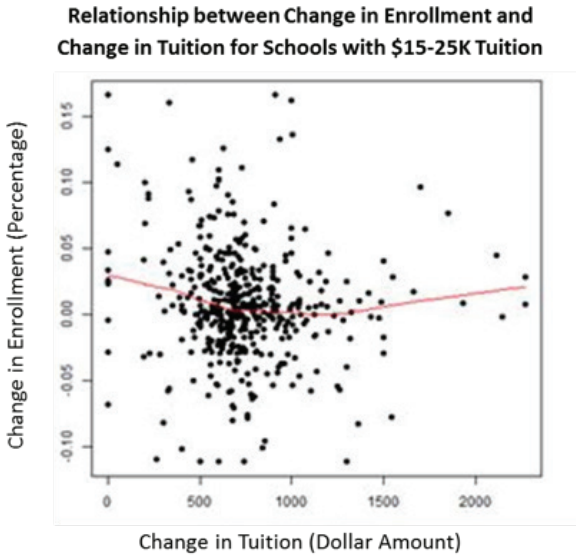
The larger dataset of schools that participated in this study allowed us to isolate distinguishing school characteristics and to determine if within a particular segment a change in tuition had any effect on enrollment. Over recent years, the study leaders have heard from the field that the relationship between changes in tuition and enrollment may differ among schools in different tuition tiers. Therefore, we decided to test this hypothesis in this study to understand this concern. As noted above, most of these new tests did not show any relationship between enrollment and tuition, including:

- High schools where tuition is less than $15,000 and
- High schools where tuition is greater than $25,000.

It should be noted that we set out to be comprehensive and representative of the independent school landscape — which we met given that 259 schools submitted data from all regions, sizes, school types, etc., allowing us to look at datasets containing different flavors of schools. With this said, we did not intend to comprehensively examine one particular set of schools against another (for example how small schools in the Southeast compare to large ones in the same region), as this type of undertaking would have necessitated an even larger and more focused dataset.

There was, however, an unusual if nominal finding for schools with an annual tuition that was considered in the "mid-range" (between $15,000 and $25,000 starting tuition). Overall, data from schools of high (over $25,000) or low (under $15,000) tuition all experienced that rising tuition does not affect enrollment. However, the schools with mid-range tuition showed a strange pattern. For these schools, a $1,000 tuition increase was associated with a smaller enrollment increase (1.5 percent) than lower or higher cost schools.

The team looked at this result carefully. To clarify, this result does not indicate that a price increase leads to an enrollment decrease for mid-range tuition-charging schools. The study is clearly consistent with the previous ones: Changes in tuition and enrollment do not share a negative relationship. Note the parabolic curve in the graph below:



Let's unpack the interpretation, as this graph is a bit difficult to understand. First, schools that did not increase tuition experienced on average a 3 percent enrollment growth (though you can see a wide array of results). However, those schools increasing tuition between $0-1,000 saw lower (though not negative) enrollment growth. And yet for increases above $1,500, schools saw increasing enrollment growth, and those that increased $2,000 saw the same 3 percent increase in enrollment as those that did not raise tuition at all. This pattern (a quadratic function) held even after controlling for variables in the school's control and environmental factors outside a school's control. Schools in this band went from growing enrollment at no tuition increase to flat enrollment growth at a 5 percent tuition increase (5 percent of $20,000 is $1,000), and enrollment increases occurred again at tuition increases above $1,500. (Important note: While the chart shows enrollment growth above a $1,500 increase, the sample size is very small, so this data should be taken carefully.)

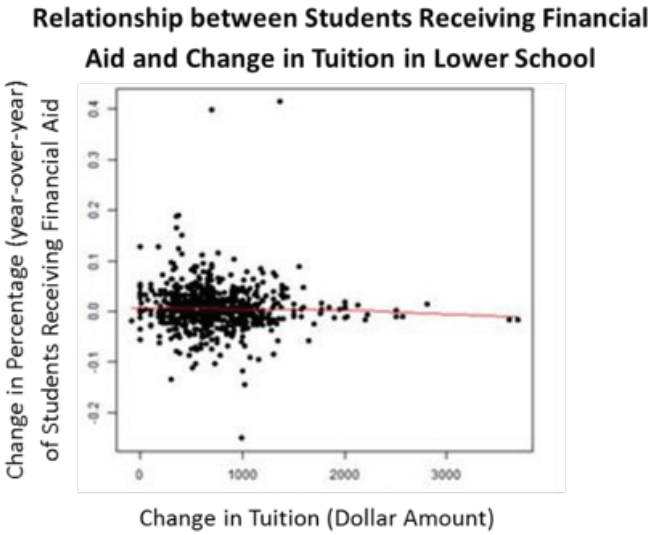
Tremendous caution must be used when interpreting this particular finding. A simple cost-benefit analysis we conducted suggested that schools that held tuition flat to drive 3 percent enrollment would see net revenue drop. Let's assume a 500-student school holds price flat to achieve 3 percent enrollment increase which is 15 additional students. Assuming tuition is $20,000 and financial aid as a percent of gross tuition is 20 percent, that's an extra $240,000 of net tuition. However, if the school had raised tuition by $1,000 without any enrollment growth, it would have seen net tuition increase $400,000. Therefore, our recommendation to schools in this middle band is to drive their quality, not limit price to maximize their net revenues. Regardless, this data supports the idea that an independent school is better off embracing its identity as an expensive school ($25,000 or more) or a fairly inexpensive one (under $15,000), but being caught in between those poles can be difficult. Such schools must carefully balance distributing financial aid and collecting tuition.

Financial Aid

Another hypothesis studied was from field-driven concerns that tuition increases were driving schools to put more students on financial aid. The data surprisingly debunks the original hypothesis, yet opens an intriguing alternative insight.

The graph below suggests that when comparing Year-Over-Year increases of the percent of students on financial aid against tuition changes, the line of best fit shows no relationship, and the best fit line is through zero enrollment change. However, the data did indicate birthrates have a relationship with financial aid, though it is of small magnitude. The data suggest that when comparing schools in the U.S. county with the lowest birthrate, which was about 8 percent, and those in the U.S. county with the largest birthrate, which was about 18 percent, that schools in the county with high birthrates experienced 3.7 percentage-point fewer students on financial aid compared to those with the lowest birthrates. In other words, schools located in counties with higher birthrates do not have to increase financial aid as much as schools in lower birthrate counties. We suspect schools in counties with low birthrates are in a more competitive market for students and hence may be using financial aid as an

incentive to attract families. Schools in higher birthrate areas have sufficient population that does not create the pressure to incentivize families as much.



Small Schools

We also tested the hypothesis that smaller schools (those with fewer than 300 students) may be more sensitive to price increases with regards to enrollment. The data indicated this is not true at all. A weak effect suggests that small schools' offering of financial aid to more students can be an instrument of enrollment retention. The data indicates that a school with a 10-percentage point higher proportion of students on financial aid was associated with nearly 1 percent higher enrollment. Once again, a cost/benefit analysis would likely limit the attraction for this kind of thinking. For our back-of-the- envelope analysis, let's examine a school with 200 students and a tuition of $15,000. The school decides to increase the percentage of students on financial aid from 30 percent to 40 percent, resulting in a 1 percent tuition increase – or two students. Even at full pay, that generates $30,000 of added income. However, a 10-percentage point increase in students on financial aid means another 20 students on aid, and with a typical aid award of let's say $5,000 (33 percent of full tuition), that means $100,000 of additional financial aid expense. Schools should certainly explore other retention methods before jumping to offer additional financial aid. However, small schools that are concerned about lower-than-capacity classrooms may very well find that increasing financial aid and decreasing net revenue is an agreeable trade-off.

One more note about financial aid and enrollment relationships. This research group believes that in nearly every case the cost of increasing enrollment by increasing financial aid outweighs the benefit. By lowering your price you may indeed increase enrollment, but you also decrease net revenue, which means that increased enrollment served no actual revenue advantage. As previously stated, there certainly may be other important reasons to increase enrollment. But schools should understand that simply adding enrollment without increasing net revenue may not be a wise financial decision.

There are other findings in the data that this white paper lacks space to cover; however, most of them prove as counter-intuitive or contradictory as the ones noted here already.

Conclusion

Independent schools serve a market niche that does not seem to experience enrollment declines as price increases. This result is consistent with previous studies. Furthermore, tuition increases and changes in enrollment share few, if any, relationships. We believe that the distinctive missions of our individual schools and the effective execution of that mission – known as perceived quality, perceived value, or distinct value proposition – are the more important determinants for enrollment stability. The research suggests that as long as parents perceive high-quality, differentiated education, individual schools have flexibility to consider tuition increases without experiencing adverse enrollment effects. However, the inverse of that statement is also true: If families do not perceive a high-quality education with a strong value proposition, increasing tuition or even keeping it flat or reducing it will still result in dropping enrollment. Of course, as in everything, there are individual exceptions to these findings. Your school could be the anomaly, but the most important takeaway from the 2016 study is that statistically, changes in tuition do not translate into changes in enrollment demand. It's the mission and excellent execution of that mission that are the significant enrollment stabilizers.

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