

## **Lutheran Elementary School Enrollment Decline**

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At the request of the Commission on Schools of the Board for Parish Services of the WELS, an investigation of possible causes for the precipitous decline in enrollment in the Lutheran elementary schools of the synod over the past number of years has been undertaken by CHARIS. As part of this investigation, a statistical analysis of enrollment data for the past five years was conducted. After decomposing the numbers, the following preliminary conclusions were reached:

1. Our schools are experiencing the most growth from the enrollment of "Other Christians," but that is also the most volatile component of enrollment.
2. The enrollment of WELS children from congregations without their own schools is less volatile than enrollment of members in their own congregation's school.
3. The declining enrollment problem is more significant for schools outside of Wisconsin.
4. Tuition is considered a problem only by WELS members for their own congregation's school.
5. Enrollment of children in their congregation's school is what is suffering the most.
6. Congregational members, where there is a school, are more price sensitive than others.

Total enrollment from 2002 to 2003 in non-Wisconsin WELS schools declined 12.4% while Wisconsin WELS schools had an enrollment drop of 1.9%. Congregational enrollment in Wisconsin dropped by 2.8% over the same time period while outside of Wisconsin enrollment increased by 2.25%. From 2002 to 2003, "Other Christian" enrollment increased both inside and outside Wisconsin by 7.99% and 11.79%, respectively.

What explains the variability in enrollment? What is the problem? And what are some solutions? To help address these questions, a standard marketing research technique was employed that uses the cross-sectional time-series data to estimate demand curves for Lutheran education. The formulation that was used is a standard formulation called a Cobb-Douglas demand function, where one specifies the determinants of demand for each category of students: congregational member, other WELS member, ELS member, other Christian, unchurched, and mission congregation member. For each category, it was posited that demand would be a function of time, state of residency, tuition, and the composition of the student body (i.e., how heterogeneous the school is in terms of the fraction of enrollment that the other categories comprise).

Although this is a rather superficial analysis, a similar method has been used by others with illuminating effects. In one such study, Houston Jr., et. al. (2003) used a multinomial logistic methodology to analyze a parent's decision as to whether to send his or her child to a public school, private school, or to home-school. The empirical results suggest that the decision to home-school depends upon the relative expected quality of the education the child will receive from the available alternatives. The decision to home-school is positively related to the mother's educational level attainment and diversity within the public school district (suggesting a bias toward not approving of diversity).

Socioeconomic variables and religious preferences are also significant factors in explaining private school enrollment. Kim (1988) estimated the demand for education as though it were part of a general consumer choice problem. As such, it was discovered that education is very income and own-price elastic. What this means is that as people's incomes increase, they are more likely to send their children to a private school, but as the price of private education increases, they are less likely to choose the private alternative. The demand for education must be analyzed in conjunction with the

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demand for other goods because as the price of other goods increases—with income held constant—there is an income effect on the demand for education. What this means is, people will be less likely to choose private schooling because their real income has fallen. This illustrates that part of the demand for private education is independent of specific qualities of the education to be received at the private institution.

Education is considered a risky investment, so the reputation of the institution is very important in determining the demand for education. Berthold, et. al. (2001) assert that people under-invest in education for two reasons:

1. There are positive externalities to education that the individual making the investment does not get compensated for, and
2. Individual returns to education are generally uncertain, which is a disincentive to investing in an education. The uncertainty relates to the individual returns to the education: finishing the education successfully and future returns after successful completion. Because markets are not complete, individuals are unable to insure against these risks, so they decide to not expose themselves to the risk.

In other words, the amount of tuition that people are willing to pay (their investment) is balanced by a belief about the relative value of the education (return on investment) for their children. This cost/benefit analysis in the context of the Lutheran elementary school might factor in such things as size of school, co-curricular programs, learning resources, and other externals.

For private institutions, this means that there are two options for overcoming this risk aversion problem: 1) charge a success-dependent tuition, or 2) have a strong reputation for successful completion and a reputation for high returns to the education after successful completion. Because the outcomes of Lutheran elementary education have not been publicized (other than on state or national standardized achievement tests) and schools are typically very small (i.e., < 100 students), meaningful measures of success would seem to be limited. On the other hand, developing a strong academic reputation on the basis of the success stories of these students when in high school (preparation, participation, accomplishments, etc.) seems to be a good strategy for demonstrating value to parents.

Further analysis of the data is needed in which a multinomial logistic demand equation is developed where the explanatory factors include:

1. Baptism rates (or birthrates) for the community the schools serve
2. Socioeconomic factors of the students
3. Religious attitudes of the parents
4. Whether the parents went to private school
5. General level of regional inflation
6. Curricular and extracurricular offerings of the school relative to other alternatives
7. Proximity of the school to the student
8. Age of the school
9. Tuition charged to members and nonmembers
10. Size of the school

For now, based on the limited data set available, a panel demand analysis was conducted with limited factors (Tables 1 through 4 present the models). For congregational members, living in Wisconsin tended to increase the likelihood of sending their child to a WELS school. Tuition was negatively related to enrollment with a 1% increase in tuition leading to a 0.13% decline in enrollment. As the percentage of other WELS students increased in the school relative to other students, enrollment by congregation members increased as well.

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For other WELS members, living in Wisconsin actually reduced the likelihood of enrolling in a WELS grade school. Tuition was not a statistically significant determinant of enrollment for other WELS members. This might be due in part to the common practice by congregations without schools to pay all or part of the tuition for members to send their children to a neighboring WELS congregation's school. It was also found that those schools which had a larger percentage of their congregational members enrolled increased the number of other WELS students enrolled as well. This would seem to address the quality or reputation factor, namely, that the reasons contributing to a higher percentage of member children being enrolled were perceived to be the same value factors that attracted other WELS students to enroll. When WELS parents have a number of schools to choose from in a geographical area, they are more inclined to send their children to the school with the best reputation, regardless of tuition.

For other Christian children, living in Wisconsin reduced the likelihood of enrolling in a WELS grade school, which may also be due to the number of available alternatives within the community. Perhaps WELS schools have better reputations for quality education outside Wisconsin than inside? This is purely conjectural, however. Tuition was not a statistically significant determinant of enrollment for other Christian children. Such families seem to be willing to pay whatever is charged.

Mission children enrollment was particularly interesting. For this group, enrollment was actually positively related to tuition! When tuition increased, more attended, but this should not be interpreted as meaning that raising tuition causes higher enrollment numbers because there are a number of excluded variables that might be correlated with tuition that better explain this phenomenon. Another statistically significant determinant of enrollment is the number of other Christian students in the school. As there were more Christians (mainly non-WELS), mission children enrollment tended to increase. This may be due to aggressive outreach activities on the part of the WELS schools into the non-WELS community. It may also be due to reputational factors. This finding is of particular interest as the purpose for having a Lutheran Elementary School seems to have shifted from providing Christian education for members to serving as an evangelism and outreach tool to the community. Unfortunately, not enough observations were available for the nonchurched population to estimate demand curves for this important group.

Again, the problem within our schools may not be as bad as originally thought. As more communities experiment with parental school choice programs, there are more opportunities to reach out into the unchurched population. However, this may also have the effect of changing the composition of our schools. On the other hand, were it not for the dramatic increase in the enrollments of Milwaukee Lutheran schools that participate in the Milwaukee parental school choice program, the overall synodical decline would be much worse. There are a number of areas that still need to be explored to determine the precise causes of the changes within our schools, and that is something CHARIS will be working on with our synod in the future. The most challenging aspect of future study would seem to be an accurate measure of the beliefs, values, and attitudes of WELS members that might explain their decisions to send or not send their children to a Lutheran school.

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### References

- Houston Jr., Robert G. and Eugenia F. Toma. 2003. "Home Schooling: An Alternative School Choice." *Southern Economic Journal*. 69:4, April, 920-935.
- Kim, H. Youn. 1988. "The Consumer Demand for Education." *The Journal of Human Resources*. 23:2, Spring, 173-192.

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**Table 1**  
**Demand Curve for Congregational Children Enrollment**

Variable	Parameter Estimate	Sig. Level
Intercept	26.13415	0.6998
Wisconsin <sup>1</sup>	0.554252	0.0001
Year	-0.01101	0.7456
Tuition	-0.13629	0.0178
Other WELS children	0.212812	0.0001
Other Christian children	0.024734	0.5554
Mission children	0.113129	0.0203
R-squared = 27.340%	Number of Observations = 257	

**Table 2**  
**Demand Curve for Other WELS Children Enrollment**

Variable	Parameter Estimate	Sig. Level
Intercept	-40.7513	0.7112
Wisconsin	-0.26111	0.0924
Year	0.020106	0.7150
Tuition	0.045270	0.6678
Congregational Enrollment	0.553204	0.0001
Other Christian children	-0.02004	0.7699
Mission children	-0.15470	0.0362
R-squared = 13.915%	Number of Observations = 257	

**Table 3**  
**Demand Curve for Other Christian Children Enrollment**

Variable	Parameter Estimate	Sig. Level
Intercept	-21.3604	0.8369
Wisconsin	-0.51767	0.0004
Year	0.010910	0.8336
Tuition	0.138171	0.2457
Congregational Enrollment	0.006069	0.9498
Other WELS children	-0.01381	0.8163
Mission children	0.418253	0.0001
R-squared = 25.310%	Number of Observations = 257	

<sup>1</sup> Wisconsin is an indicator variable that takes on the value 1 (one) when the school is within Wisconsin and the value 0 (zero) when the school is outside of Wisconsin.

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**Table 4**  
**Demand Curve for Mission Children Enrollment**

Variable	Parameter Estimate	Sig. Level
Intercept	68.72322	0.4642
Wisconsin	-0.23660	0.0739
Year	-0.03489	0.4577
Tuition	0.266525	0.0028
Congregational Enrollment	0.079740	0.3655
Other WELS children	-0.11269	0.0362
Other Christian children	0.322604	0.0001
R-squared = 24.780%	Number of Observations = 257	