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ABSTRACT

This paper presents findings of a study that examined the relationship between structural conditions and parent proclivity to educate their children at home. The term "structural costs" was used to refer to conditions within the district that could be changed by the district. Data were obtained from a survey sent to the departments of education in five states with widely different regulations for home schooling--Wisconsin, Michigan, Washington, Oregon, and Nevada. The data from each state were divided into two groups based on the percent of home-schooled students in each of the selected districts. The first analysis step conducted t-tests for independent samples. The independent variable was percentage of home-schooled students in the district--high or low. Dependent variables included per-pupil costs (PPC), reading scores, type of district (rural, isolated, or nonrural), local mill rates or percent of local resources in the PPC, and percentage of free and reduced lunches. Next, multiple regression analysis was conducted. Findings indicated no correlation between student reading scores and the rates of home schooling. Rural, independent, and nonrural districts did not demonstrate differences between high and low home-school districts on any of the academic measures. Oregon was the exception in each of these findings. Some support was found for the hypothesis that district socioeconomic conditions influence parents' decisions to home school their children. Only in Oregon and Michigan did per-pupil cost affect the decision to home school. The data overwhelmingly demonstrated no support for a linkage between structural costs and parents' proclivity to home school. It is concluded that school-linked matters are not responsible for the dramatic rise in the percent of students being home-schooled in the United States. (LMI)

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The proclivity for parents to home school their children appears to be a phenomenon which is expanding at an expanding rate in the United States. Estimates range from tens of thousands to well over one million students by the late 1980s (Knowles, 1988) and the number is growing.

Ever since the advent of compulsory education in the pre-Civil War era, there have been parents who chose to educate their children at home rather than in organized schools. Why there has been a major expansion in numbers of these types of parents during the last decade is an unanswered question. Colfax (1988) stated in his volume, Home School for Excellence:

> Some parents teach their children at home for very defined political, religious, philosophical or pedagogical reasons, while others--perhaps even a majority--would be hard pressed to say exactly why they teach their children at home.

Mayberry (1988) lists four reasons that motivate parents to educate their children at home. The survey in which she was involved indicated that religious beliefs was mentioned most frequently followed by academic achievement, social concerns, and new age philosophies.

This study is interested in aspects of the second, and to a lesser extent, the third questions cited above.

Klicka (1993) spends an entire chapter chronicling the "incredible failure of public education." He presents some (highly biased) data on finances, both the lack of

funds and the misappropriation of the monies that are spent, the failure of the "look-see" method of teaching reading (with no phonics), moral decay from the failure to teach "values," and the middle class flight which has left the schools as the "turf of the lower class." The book, which is in no way a scholarly treatment, is a "call to arms" for the prospective home schooler.

Certain of these matters are what might be terms structural costs from the point of view of educators. Lack of spending, i.e., per pupil costs, high tax burdens, reading scores, location of the school, and an indication the socio-economic condition of the school community are addressed, in one way or another, to attempt to determine if there is a systematic effect on decisions of parents to home school their children.

Gathering systematic data from home-school parents is very difficult. State statutes often protect the names of parents, national organizations often refuse to give out names or to participate in any way, and among some (or many?) there is an anti-government bias. Frankly we do not know, other than in the most general terms reported, earlier, why parents want to home school their children. One method to proceed is a model used occasionally in medical research of testing variables which logically may be linked, perhaps indirectly, to possible causes to either support or reject them as contributors. This study employs that technique.

The questions which are explored are (1) are there certain structural costs (variables over which the school(s) have at least nominal control) which vary systematically among districts, or other governmental divisions, between high and low percentages of home schooled students? (2) Are there structural variables which,

students in a district? (3) Is there financial gain, or loss to a school district (or to a state) when a parent chooses to home school a child?

Sample

Every state either by statute, court action, or state department regulation has dealt with the question of home schooled children and/or parents. Unfortunately, there are major differences among states in their treatment of these groups. Consequently, a random sample of states would serve little purpose since the statutes, etc. would greatly limit any generalizability. Thus the sample which was selected consisted of states with as widely differing circumstances as seemed possible. Five states, Wisconsin, Michigan, Washington, Oregon, and Nevada were selected. In three states a sample of district with high and low percentages of home schooled children was drawn. In one state, a sample of counties, and in one the population of districts was used. Each state could only be generalized to itself. Although each state has characteristics which make it at least somewhat analogous to some other states in the union.

Data and Methodology

The data set from each state varied since each collected slightly different data which fitted the statutes and regulations particular to that commonwealth. The vagaries of the data particular to each state will be described in the findings section of the paper. In all cases the data came from the state education department with one exception. The type of district whether rural, isolated, both rural and isolated and non-

rural was assigned by asking an expert(s) from either the state department or from the Department of Educational Administration at the state university to judge each district. In many cases there were population centers and rural areas in a district. In those cases the expert(s) made a judgement about the influence of the urban area, and assigned a designation based upon that observation.

The data from each state were separated into two groups based upon the percent of home schooled students in each of the selected districts. As might be suspected the districts which fell into the high percent of home schooled students varied by state. Demographies, statutes, and state department regulations all influenced the percentages state by state. For example in Nevada, the low bound of the high percent districts was .009% while in Wisconsin it was 2.2%.

The first set of analysis was run using t-tests for independent samples. The independent variable in the first run was the high percentage districts versus the low. The dependent variables were per pupil costs (PPC) reading scores (which varied among states depending on whether scores were reported as a standard score or in percentiles), the type of district, rural, isolated, etc., local mill rates (if available) or percent of local resources in the PPC, percent on free and reduced lunch, plus other data which were unique to an individual state.

The next set of analysis used type of school i.e. rural districts from the high percentage sample versus rural from the low percentage with the dependent variables as above. Then a run of isolated districts, another on both rural and isolated, and another of non rural high vs. low.

The analysis used to test the second question (see above) to measure association was a stepwise multiple regression with percent home schooled with the criterion and the dependent variables previously listed as the predictors with a p= <.05 as the default level.

The third question is a matter of counting and only applies in one state, Wisconsin.

Findings

The findings are presented on a state by state basis.

Wisconsin

A total of 147 cases (districts) were in the sample. Sixty-five were labeled as high percentage of home schooled students in the district. The range of percentage was from 9% to 2.8%. Eighty two were designated low as low percentage districts. The range was from .9% to .2%.

A Stepwise Multiple Regression revealed that for all districts the only variable which entered at the default level was type of district. It accounted for 8% of the variance in the model which included per pupil cost, local millage, lower three stanine in 3rd grade reading, high three stanines 3rd grade reading and the same for 8th grade reading. The Pearson correlation was negative (districts were

designated 1 through 4). Thus lower designations, 1 was rural, indicated a tendency for higher percentage of home schoolers. Non rural tended to be lower.

T-tests were also run on the data. All cases (147) divided into two groups (65 high, 82 low) and the parametric test was used for analysis. The independent variable (the high and low districts) and each of the variables listed above as a dependent. One of the t-tests with percent for students in free or reduced hot lunch reached a difference generalizable at $p = < .05$. The variable percent of the third grade students in the lowest three stanines had a $p = < .053$ with a larger mean percent of students in the low stanines from high home-school enrollment district larger (5.2%) than the low (3.62%).

When all districts were divided on the classification of rural (high 23, low 17) there were no significant differences on any of the variables those districts assigned as isolated (H - 16, L - 4) there was significant difference $p = < .001$ on percent of students in the high three stanines in third grade reading with the high percentage home-school districts having 84% and the low home school 98%.

Districts which were classified as both rural and isolated (H - 12, L - 9) produced one significant difference students in free or reduced lunch and the non rural districts (H - 14, L - 51) also had no significant differences on any of the variables.

In the regression model none of the structural variables, PPC, millage, and reading were significantly related to percent of home schooled students in the district. Between rural districts with either high or low percentage of H/S there were no significant relationships. Isolated districts had only one variable which reached the default level of the percent students in the top three stanines on the Wisconsin Third Grade Reading Text. The other two classifications did not produce any significant

relationships.

Thus neither the cost per pupil or the school tax paid appeared to be a factor in home school decisions. Nor did, in any systematic fashion, score, on standardized reading tests in either third or fifth grade. However, the surrogate for socio- economic condition, the percent of children on free or reduced lunch, did appear. For all cases the mean for the districts with higher home-school percentages had a higher mean reduced lunch participation (26%) than the low percentage districts. The same was true for those districts closed as rural (H=26%, L=19%).

In response to the third question - do districts gain or lose at the margin when a parent decides to home school a child? Wisconsin has several categories of aid to school districts the numbers which follow only represent "general aid" from the state. Wisconsin uses a type of formula equalization to determine the share of a districts costs that the state pays. Since by statistic home schooled children are not counted as part of the school membership, thus numbers of non-enrolled children change the formula which is based on property value, per pupil. Less pupils in membership raise the district property valuation which would reduce the amount paid to the district by the state.

Thus, if the state pays a majority of the school budget through equalization payments, the district loses dollars when it educates fewer students. The opposite is true when the local district pays the majority of the school budget through property tax. Of the one hundred forty seven districts in the sample sixty two lose fiscal resources when students are home schooled and eighty five gain. Using the 1991-92

data the average loss over the sixty five districts would be 15.1% of the funding with a range from 72% to 1%. The average gain by districts for the other 85 would be 52.2% with a range from 84% to 1%.

Washington

A total of 141 cases comprised the sample. There were 73 cases from districts with a high percentage of home schooled students and 71 from low home school percentages. The range was from 16.2% to 1.4% in the high home school districts and from 1% to .01% in the low.

A Stepwise Multiple Regression for all districts revealed two variables that were related to the percent of home schoolers in the districts. First was the type of district which accounted for 9.7% of the variance and the percent of students in the district that were in the top three stanines in 8th grade reading which added 4.5% to the estimation.

All the cases were divided into two groups, high and low, and t-tests were run using each of the variables except type of district as the dependent variable. There was only one which produced a significant difference, the percent of students in the high stanines in 8th grade reading ($p = < .026$). The higher H/S percentage, 20% versus 16%, was in the low home school enrollment group.

The districts which were classified as rural both high (29) and low (24) had only one significant difference. Again, it was the percent of students in the high three stanines in 8th grade reading ($p = < .017$) with 21% of low enrollment districts and 15%

in the high group.

In the isolated districts, with 10 high percentage of home school districts and 3 low, there were no variables which produced a significant difference at or beyond the $p = < .05$ level. The same was true for districts considered both rural and isolated. Although per pupil costs which was higher in the high enrollment districts N = 16 $6,995 versus $5,534 a t-test produced a probability of $p = .067$. There were also no significant differences in the non-rural districts.

In Washington where approximately 80% of the per pupil cost is paid from state revenues, it is obvious that home schooled students who are not counted on the district roles, cost the districts money to which they would be entitled if the student was matriculating.

Nevada

Nevada school districts required a somewhat different type of analysis. There are only seventeen districts, all but one Carson City, are county wide. Consequently, no sample was drawn and all districts in the state were included in the analysis. Thus, no t-test could be run although the Multiple Regression was performed.

There were extreme differences among the enrollment among the counties. Esmeralda County had only 132 students in 1992-93, while Clark County had 121,984. The multiple regression run on all the variables produced a strong relationship between percent of students in the low three stanines in 9th grade reading and the percent of home schooled students. Although the means of the two groups were quite

close. In group one high home school enrollment (6 districts) the mean was 13 percent in the top three stanines and the low (10 districts) was 12 percent. Perhaps the most striking mean difference was the percent from the low three stanines in third grade reading. The high home school enrollment districts had 9% in the low three stanines while the low home school districts had 13%. In the other structural variables, per pupil costs $7,595 high versus $5,539 low was an important difference but the means of the other variables were very close.

No data were available that would allow for generalizations about whether districts gain or lose when home schooled students do not enroll in public schools.

Oregon

Oregon presented a different organizational pattern than any of the other states as far as the management of home schoolers. There are approximately 400 local school districts in the state which is analogous to both Washington and Wisconsin. Thus, when a student is home schooled he/she is no longer in attendance at that district. However, the statutes of the state require the home-school data are to be cumulated by county rather than by district which is

somewhat more analogous to Nevada in which all districts but one are countywide districts.

Consequently, the data used for analysis had to be reordered. Certain of the data were reported by district, e.g., per pupil costs, these had to be aggregated into

counties to be useful. Other data, in their original form, were given by individual school sites. These also were aggregated into counties. Home school data were given by county. A sample of both high home school enrollment counties and as low home school counties was selected from the total number in the state. Thirteen high enrollment counties with home school enrollment percentages from 9% to 2% comprised that sample. While the twelve low home school enrollment were from 1.4% down to zero percent.

To search for associations, a multiple regression analysis was done with all counties. Two variables per pupil cost and free and reduced lunch entered in the stepwise procedure. Per pupil costs explained 56% of the variance in home school enrollment, while lunch added an additional 9%. Several zero order correlations are worthy of note; a positive .790 of per pupil costs with home school enrollment, a positive .623 with third grade reading scores, a positive .452 with the percent of free or reduced hot lunches, and P.P.C. Univariate t-tests with high and low enrollment as the independent variable did not produce a significant difference on the dependent variable per pupil costs. However, there were significant differences between the group on third grade reading standard scores $p = < .032$ means of the high was 204 points the low 202, and attendance at $p = .01$.

Two additional multiple regressions were undertaken. In the run with the high home school enrollment counties, only one variable per pupil cost entered. It explained 62% of the variance in the counties with high home school percentages. Among the counties with low home school percentages, no variables entered at the default level.

A series of t-tests were run by type of district. Between high and low home school enrollment in rural counties, a significant difference occurred in third grade reading scale scores at $p = < .045$ with the high mean at 203, the low 201. Also, a significant difference in hot lunch $p = < .007$ with means of 32% of students receiving in rural counties with high home school enrollment and 43% in low enrollment. There were insufficient cases to run t-tests on non-rural counties with high/low enrollments.

Michigan

The data from Michigan are somewhat similar to that from Wisconsin. That is, there are approximately 375 districts with a majority of them having some children home schooled. A sample of one hundred fifty-two (152) districts were in the sample with 76 in both the high percentage of home-schooled category and the balance in the low. The percentages differed from other states. The range in the high home-schooled was from 1.45% of the enrollment down to .07%. The low home school districts ranged from .001% up to .007% of enrollment.

The variables which were tested were per pupil cost ($2,890 - $8,300). Fourth grade reading, eighth grade reading and type of district. Three multiple regressions were run. The run which included all districts in the sample had only one variable which met the default level ($p = < .05$). That was the type of district, rural, isolated, non-rural which accounted for 3% of the variance among the districts. A regression run for the high home school districts produced two variables, per pupil costs which accounted for seven percent (7%) of the variance and enrollment which added an

additional one and one-third (1.3%) percent. For districts with low home school enrollments, only per pupil cost at five percent entered.

A series of t-tests were run to determine whether there were differences between groups which might be generalized. When all cases were divided into high and low, one variable per pupil cost reached the $p = < .05$ level. High home school districts had an average PPC of 3,835 while the low H/S average was $4,529. When districts were divided as rural high 30 and low 37 no variables differentiated among the two groups.

No data were available as a surrogate for differing social conditions among the schools. Also, the reading percentages for the Detroit city schools were not in the analysis.

Conclusions

What can be concluded from the foregoing data? One conclusion is that despite the somewhat vindicative hyperbole by several home school advocates (Klica, et al.) about the concerns of parents about the poor academic quality of the public schools, the data do not present a clear picture of the problem. There is no consistent pattern of parents home schooling children on the basis of differences in either the percent of students in a district who tested in the low or high three stanines in reading. Among the states, only Oregon presented a difference among the percentage of students in the high stanines in eighth grade reading. The mean percentage was lower for the high home school enrollment counties.

Likewise, with the single exception of Oregon, rural districts, isolated districts,

and non-rural districts did not produce systematic differences between low and high home school districts on any of the academic measures.

In two of the states that provided data on free or reduced hot lunch, Nevada and Wisconsin, there were differences between high and low home school districts. In both states the high districts had higher percentages of students on free or reduced lunch. This would seem to suggest that the socio-economic condition of the districts does influence parents to home school their children. Unfortunately, the data on free and reduced lunch in Michigan did not arrive in time to be included in this analysis.

Only in two states, Oregon, and Michigan did per pupil cost play a part in decisions on home schooling in Oregon. Per pupil costs were higher in counties that had larger home school enrollments $4,981 versus $4,805 while the opposite was true in Michigan. This difference in Oregon may be in part due to the prevalence of small rural districts who are prone to diseconomics of scale.

The term structural costs used in this article referred to matters within the district which, at least in theory, could be changed by the district. While there were some scattered exceptions, i.e., per pupil costs in Oregon, high stanine reading in 8th grade in Wisconsin the large majority of analyses does not indicate that (regardless of what home school writers proclaim), those matters appear linked to the proclivity of parents to home school their children. Using a type of "medical model" to search for cause one would have to conclude that these school linked matters are not responsible for the dramatic rise in the percent of students being home schooled in the United States.

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