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COMPUTING STUDENT YIELDS AT THE SCHOOL DISTRICT ATTENDANCE AREA BY LENGTH OF OWNERSHIP

Abstract

As part of school district planning and projecting future enrollments, demographers need to factor the impact of new housing developments by using student yields. While resources are available that provide statewide student yields, they may not best reflect the demographic attributes of a school district's attendance area. In this case study of a large, suburban school district in central New Jersey, Geographic Information System (GIS) software was used to project student yields by joining student address records to parcel-level property records. Student yields were computed by length of home ownership and home assessment value for detached single-family homes and townhouses/condominiums as yields are typically higher for short-held homes as opposed to long-held homes. Student yields in long-held homes, which include empty nesters and senior citizens, are not likely to have children in the school district as they would have graduated. The results showed that computing student yields by length of ownership generates a much higher yield than if the entire housing database is utilized which includes long-held homes with low student yields. In addition, the results showed that local student yields were greater in magnitude than the statewide multipliers and were also greater in value for homes that were above the median assessment as compared to those that were below. If school demographers use statewide student yields when estimating the impact of future housing development, they may underestimate or overestimate its impact as these yields may not capture the demographic characteristics of the population moving into a community. Therefore, when time and resources permit, local data should be used to compute public school student yields.

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Introduction

When projecting enrollments for school districts, one item of consideration is the number of children that may be generated from new housing. School demographers are interested in not only the number of units, but the type (detached single-family, townhouse, apartment, etc.) as single-family units can yield as much as 50 times the number of public school children as downtown apartments (Lycan, 2008). The number of public school children per housing unit, which is also known as the student yield, student multiplier, or student generation factor, is estimated by demographers in order to determine the impact on a school district. Additional children from new housing can strain a school district's budget, resulting in the hiring of new teachers, and in some cases, the construction of new schools to accommodate the inflow of students. It is important to be accurate in this estimation, particularly to avoid overspending on facility expansions. With the advancement of Geographic Information Systems (GIS) software, generating student yields can occur more locally to small geographies such as a school district. In a case study of a large suburban school district in central New Jersey, student yields of detached single-family homes and townhouses/condominiums were computed by length of ownership and assessed property values and were compared to student yields generated at larger levels of geography that are made available to school planners. The study demonstrates the importance of using student multipliers from a localized level of geography to estimate public school populations.

Data Resources

When estimating student yields, there are several resources available to school planners. One method of estimating student yields is utilizing the American Community Survey (ACS) Public Use Microdata Set (PUMS) which allows for unique cross-tabulations of data that are specific to the user's needs. The ACS data is available in single-year and five-year estimates. For geographic areas smaller than 65,000 persons, only the five-year data set is available. As of this writing, the most recent five-year dataset is from 2014-2018 where the estimates represent the average characteristics between January 2014 and December 2018. The five-year ACS contains 1% annual samples from all households and persons from 2014 to 2018, resulting in a 5% sample of the population. Due to the small sample size, the sampling error is quite large in the dataset.

If one were to use the PUMS dataset to compute student yields for a school district's attendance area, one would need, at minimum, the following variables from the database: recently constructed housing from the last decade, children's ages, and the school type (public vs. private). In this method, only new housing is analyzed, as Myers (1978) identified a strong correlation between housing and population age, whereby households in owner-occupied housing become immobile and stay for long periods of time. Eventually, children in these households would graduate from the school district resulting in decreasing student yields in older homes. Age of the child is needed to determine yields at the different school configuration levels (elementary, middle, and high) as yields are not uniform across the school levels. Finally, school type is needed to identify public school children which is the focus of this paper.

If the sample size is large enough, housing price and number of bedrooms should also be considered. Listokin and Voicu (2018) from the Center for Urban Policy Research (CUPR) at Rutgers University found that the number of bedrooms in a unit has the greatest explanatory power of public school children in a housing unit, followed by building type, building housing value, and housing tenure (ownership vs. rental). The researchers also discussed the statistically significant relationship between the number of public school children and housing price. In general, they found that the more expensive units had lower student yields and vice versa.

Since the PUMS dataset is from a sample, sampling variability needs to be computed. Coefficients of variations (CV) are calculated using a ratio of the standard error of the estimate compared to the estimate. The more variables that are used in the student yield calculations, the smaller the sample size becomes which increases the standard error. The difficulty researchers have in using the PUMS data to project student yields is that many of the CVs are unacceptably high, which limits the usefulness of the yield calculations.

Another difficulty in using the PUMS data is the limitations on geography. If the school district is county-based (e.g., as those are in Virginia or Maryland) or is in a large city, using PUMS data to compute student yields may be feasible. However, if a school district is in a small municipality, the necessary data would not be available in the PUMS dataset as the smallest level of geography is the Public Use Microdata Area (PUMA) which has at least 100,000 persons. If the CVs are unacceptably high, one might also reduce the CVs by aggregating geographic areas to enlarge the sample size, or collapsing categories (e.g., not breaking out the student ages), or dropping out some of the variables (e.g., number of bedrooms or housing price). When geographic data is aggregated, characteristics that are unique to a community are lost. If one is interested in determining student yields for homes in a suburban school district and uses computed student yields from the PUMS dataset at the county level that may contain rural and urban areas as well, these yields may not reflect the future number of children. Listokin, Voicu, Dolphin, and Camp (2006) discuss the drawbacks of not using local data, indicating that poor or excellent school districts, or "Manhattan-oriented" homes may result in more or fewer children than computed by the regional or statewide yields. Therefore, in an attempt to reduce the standard errors and CVs by aggregating geography or reducing the number of variables, the usefulness of the output is likely to be compromised.

If one does not want to perform the cross-tabulations, there are several resources available for school planners where student yields have already been computed. Community Data Analytics (CDA), a project team of Econsult Solutions, Inc., has published student yields for all 50 states based on housing type, number of bedrooms, and housing tenure (ownership vs. rental) using data from the 2011-2015 ACS (https://econsultsolutions.com/cda-demographic-multipliers). However, their student yields are based on school-age children, which includes students enrolled in private and public schools, not enrolled in school, or children who are homeschooled. School planners would need to lower the values of these student yields by applying the percentage of students attending public school. In addition, student yields are not computed by housing value in this dataset. As student yields change over time, this dataset is already outdated, as the most recent ACS data at the time of this writing is for 2014-2018. A second resource, which is a much more detailed analysis specific to New Jersey, Listokin and Voicu (2018) computed public school student yields by housing type, number of bedrooms, housing value, housing tenure, and whether the housing units are market-rate or affordable (hereinafter referred to as the CUPR study).

These two excellent resources use different attributes of the householder to compute student yields. In the CUPR study, the researchers utilized "newer" housing units, defined as homes constructed from 2000-2016. Wong, Miles, Connor, Queenan, and Shott (2017) have suggested that instead of relying strictly on new housing units, which can be strongly influenced by economic housing cycles such as the banking and financial crisis of 2008, one can sample households based on when they moved into a housing unit. The researchers refer to this as the "mover sample" which helps to capture housing turnover that may be occurring in older communities. The researchers have showed that there is a very strong correlation in the average household size between recently built homes and mover samples, whereby it was assumed that the movers to new and older units have similar attributes as those moving into new housing units. An added benefit of using the mover sample from the ACS is that the estimated number of households is 4.4 times larger on average than the newly built home sample which helps to reduce standard errors in the student yield calculation.

Using GIS

Instead of using existing data resources or performing cross-tabulations of PUMS data, GIS can be used to project student yields by joining student address records, as provided by the school district, to property data at the parcel level. Lycan (2008) performed an extensive analysis of student yields by housing type in Portland, Oregon, comparing yields from student data that were joined to parcel-level records and those tabulated from Census data. He also discusses the types of variables that are readily available from parcel-level records such as property class, year built, assessed value, sale date(s), price(s), and the number of rooms in a unit. Using a school district's student address database to compute student yields should be considered the "gold standard" as the yields reflect attributes specific to the school district's attendance area.

Once the two datasets are joined, the simplest way to compute student yields is to divide the total number of public school students of a particular housing type (detached single-family, townhouse, etc.) by the total number of homes of that type. However, the main drawback of this computation is that the student yield will include homes owned by all age segments of the population, including empty nesters and senior citizens, who are not likely to have children in the school district. Student yields computed in this fashion would likely underestimate the future number of children from new housing developments.

To project student yields more accurately, length of ownership of the homes should be considered in a process analogous to using the mover sample as utilized by Wong et al. (2017). Lapkoff and Gobalet (2008) have analyzed patterns of student yields by length of ownership for affluent school districts in California which show elementary (K-5) student yields are highest between three and ten years of ownership and are very low at around 20 years of ownership. They also make it clear that student yield distributions by length of ownership are a snapshot in time. If the percentage of children in the population changes, or the demographics of the community change where ethnic groups with larger family sizes enter, or if the school district's reputation changes, student yields are likely to change as well.

Analyzing characteristics of home occupants by length of ownership is not a new concept. Myers and Doyle (1990) examined the relationship of length of ownership with the age of the occupants and the number of bedrooms in the housing unit. Similar analyses were also conducted by the researchers based on when the home was constructed. Length of ownership is part of the life cycle of a home. The life cycle is analogous to a life table where a home is sold and "dies," and a new household results in a new "birth" (Lapkoff & Gobalet 1994). However, when the home is occupied by new owners, the household size and racial and demographic characteristics of the occupants may be very different than the previous owners. Gober (1990) discusses how certain population segments moving into homes break the traditional mold of the life cycle model which starts with families with young children evolving eventually into empty-nesters, only to start over again. Households with multiple families, same-sex couples, divorced individuals living alone, and childless couples who have no intention of having children, are some of the population segments purchasing housing. One cannot assume that a sold home will transfer to the nuclear family with two children. Therefore, it is important to analyze student yield distributions by length of ownership periodically as neighborhoods, and the people who occupy housing units, continually evolve.

A Central New Jersey Case Study

The community analyzed in this study can be considered of a higher socio-economic status as its median family income ($130,466) is nearly $30,000 higher than the state median according to the ACS. Regarding educational attainment for adults aged 25 and over, 54.3% of the population had a bachelor's degree or higher as compared to 40.8% in New Jersey. The town's parcel-level property tax records were downloaded from the Monmouth County Tax Board database which possesses tax records for all counties and municipalities in New Jersey, and joined to the student database, provided by the school district, on the property address variable. Properties in this database consist of single-family, two-family, three-family, and four-family homes, whereby it was not possible to distinguish how many units are in a home nor the type of unit (detached single-family, townhouse, etc.). Other state or county databases typically have identifiers for the type of unit and the number of units so that more specific analyses can be conducted. Data fields in this database included the property address, owner name, block and lot, sale dates and prices, total assessed value, and the year that the home was built. While student yields correlate highly with the age of the owner (McKibben & Cropper, 2014), demographic characteristics of the owner, such as age and race, were not available, which prevented analyzing student yields by the owner's age. If recently purchased homes are acquired by empty-nesters and senior citizens, the student yield would be lower as these groups are not likely to have public school children. As discussed previously, Listokin and Voicu stated that student yields also correlate highly with the number of bedrooms and housing value. Unfortunately, the parcel-level dataset did not include the number of bedrooms. With respect to home value, the most recent sale price (inflated to 2020 dollars) would be a reliable indicator of a home's market value. However, many homes in the database had never been sold and therefore had no sale prices. Instead, the total assessment, which is the assessed value of the land and structure, was used as a proxy for home value.

The goal of this analysis is to compute student yields by length of ownership for detached single-family homes and townhouses/condominiums and to compare these yields with those from CDA and CUPR. To compute student yields by length of ownership, it was necessary to know the year of each home's most recent sale. Determining the most recent sale date was not always obvious. Some of the most recent sale dates had a sales price of $1 or $100. These "paper sales" were coded as a non-usable deed transaction. These transactions include sales between members of the immediate family, resulting in a change in title but often not a change of occupant. In these instances, the data were excluded from the analysis, and the next most recent sale date was used instead.

One of the limitations of the parcel-level property database was that the earliest sale date recorded was from 1973. Home sale data were available through 2018. Since many of the homes did not have a valid sale during this time period, the length of ownership exceeded 45 years, but the exact length of ownership was unknown. The community also had many homes that were constructed after 1973 that were never sold. However, in these instances, the length of ownership could be computed by simply subtracting the year that the home was built from 2018, the most recent year that sales were available. Homes with no sale dates have been owned at least 45 years.

As the aim of this study was to determine student yields for detached single-family homes and townhouses/condominiums, further information was needed to identify these types of homes as there were no codes for these unit types in the parcel-level database. Through internet research, a list of developments that contained detached single-family homes and townhouses/condominiums was constructed. For each development, all associated street names were identified using Google Maps where the unit type of each property was manually entered into the joined student-property database.

Yields by Length of Ownership--Detached Single-Family Homes

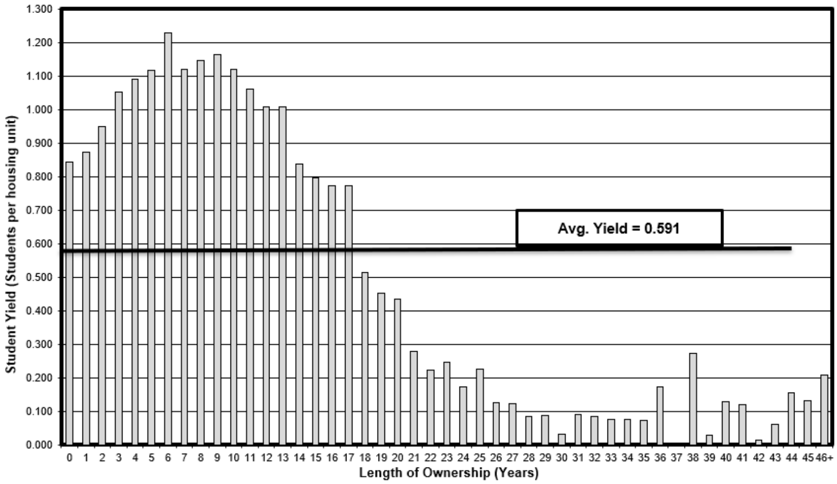
A total of 11,422 detached single-family homes were analyzed to determine their length of ownership which is based on knowing the most recent home sale. In an effort to determine the student yields by property value, homes were grouped into above and below median total assessment (hereinafter referred to as assessment).

To compute the student yields by length of ownership, the number of children was divided by the number of homes at each length of ownership for all detached single-family homes, as well as those that were above and below the median assessment, which was $103,900. Table 1 displays the student yields by length of ownership. (See Table 1, pages 218-221)

As discussed previously, it is expected that longer-held homes will have fewer children. As shown in Table 1 and Figure 1, for all detached single-family homes, independent of assessment, student yields slowly increase with length of ownership, peaking at 1.227 children per housing unit with six years of ownership. Student yields then gradually decline, in general, through 30 years of ownership before stabilizing. Student yields are typically below 0.200 with 30 or more years of ownership. While it appears that student yields are sharply increasing at 38 years of ownership, this is misleading since there are very few homes (n = 22) at this length of ownership, and one or two additional students can have a large impact on the student yield. The average student yield, irrespective of length of ownership, is 0.591 children per home, as there were 6,749 children living in 11,422 detached single-family homes.

Figure 1

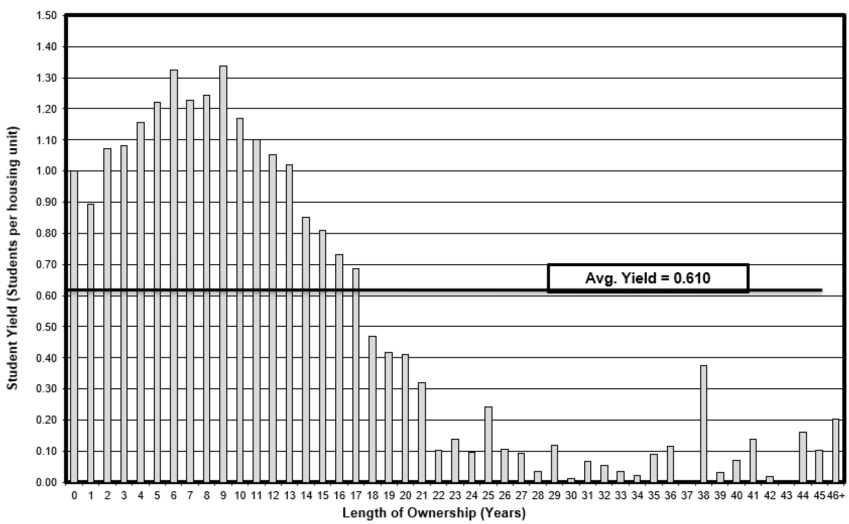
Student yields by length of ownership for all detached single-family homes



For homes above the median assessment, yields slowly increase with length of ownership, peaking at 1.339 children per housing unit with nine years of ownership, as shown in Figure 2.

Figure 2

Student Yields by Length of Ownership for Above Median Detached Single-Family Homes

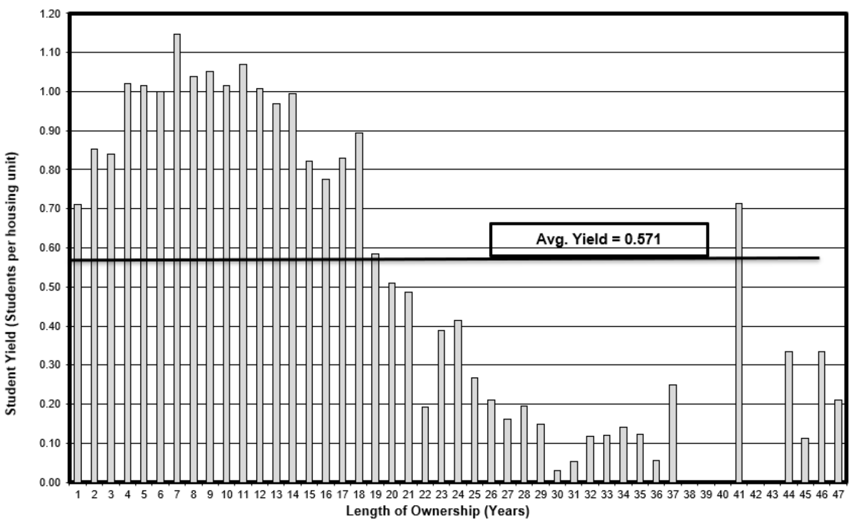


Student yields then gradually decline, in general, through 22 years of ownership before stabilizing. Student yields are typically below 0.200 with 22 or more years of ownership. Like the distribution for all detached single-family homes, it appears that student yields are sharply increasing at 38 years of ownership but there are very few homes (n = 16) at this length of ownership, which skews the yield. The average student yield, irrespective of length of ownership, is 0.610 children per home as there were 3,487 children living in 5,712 detached single-family homes.

For homes that are below the median assessment, the shape of the student yield distribution is similar, as shown in Figure 3.

Figure 3

Student Yields by Length of Ownership for Below Median Detached Single-Family Homes



Student yields slowly increase with length of ownership, peaking at 1.146 children per housing unit with six years of ownership. Student yields then gradually decline through 29 years of ownership. Homes with length of ownership exceeding 28 years had student yields that were typically below 0.200. Like the previous distributions, there are several instances where it appears that student yields are spiking, but this is a function of the low home counts. The average student yield, irrespective of length of ownership, was 0.571 children per home, as there were 3,262 children living in 5,710 detached single-family homes.

Since the length of ownership is a distribution, how can one determine what is the likely student yield in a newly constructed unit? Since the distribution is a snapshot in time, what is a reasonable student yield to use? Computing the average over the entire length of ownership underestimates the number of children, since there are so few children at longer lengths of ownership. Unfortunately, there is no research-based metric to determine what part of the distribution should be used to estimate future schoolchildren. In the mover sample outlined by Wong et al. (2017), data were used within four years of the starting year of the 2011-2015 ACS PUMS which essentially utilized eight years of data. In the length of ownership distribution, computing an average using all the years up to the peak student yield is proposed which estimates the maximum impact before student yields begin to decline. This also utilizes lengths of ownership when student yields are lower as not to overestimate the number of children in a new home. If the average student yield is computed for the first six years of ownership when the peak student yield occurs for all detached single-family homes, the student yield increases to 0.994 as shown in Table 2.

Table 2

Summary of Student Yields for Detached Single-Family Homes

Home Price	Average Student Yield	Student Yield by Length of Ownership[1]
Above Median	0.610	1.119
Below Median	0.571	0.911
All Homes	0.591	0.994

Note: [1]Average of student yields computed up to when the peak student yield occurred.

Using a similar process for homes above and below the median assessment results in student yields of 1.119 and 0.911, respectively. In each instance, the values are much higher when length of ownership is taken into consideration.

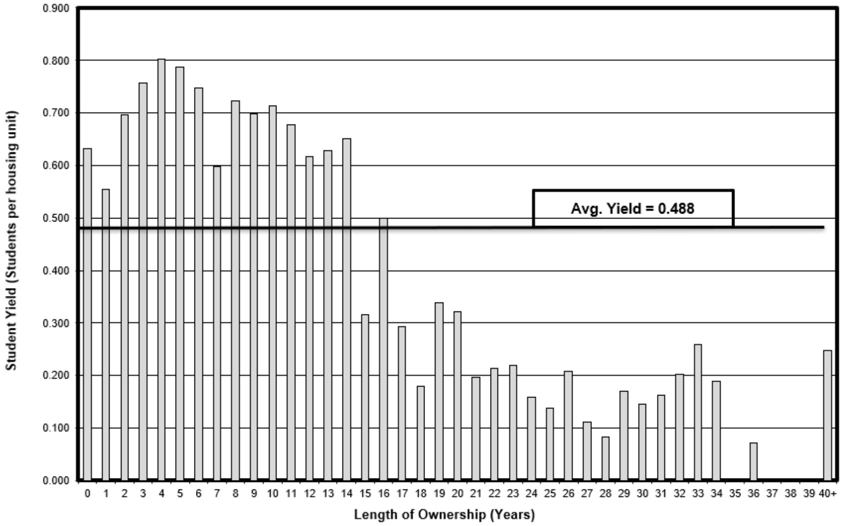
Yields by Length of Ownership--Townhouses/Condominiums

A similar analysis was completed for 3,670 townhouses/condominiums whereby current length of ownership was computed for each home. Student yields by length of ownership were then computed for all homes as well as those that were above and below the median assessment, which was $59,000. Table 3 shows the student yields by length of ownership based on the home's assessment. (See Table 3, pages 220-223)

For all townhouses/condominiums, independent of assessment, student yields slowly increase with length of ownership, peaking at 0.802 children per housing unit with four years of ownership as shown in Figure 4.

Figure 4

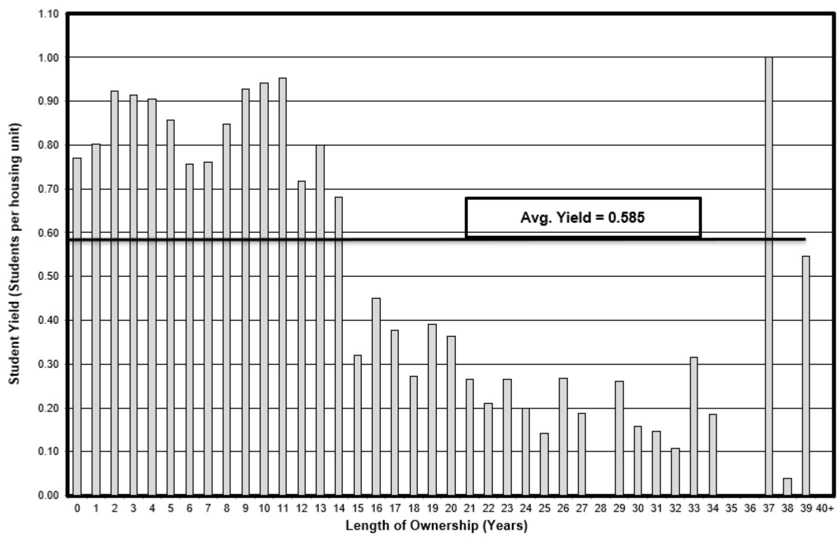
Student Yields by Length of Ownership for all Townhouses/Condominiums



Student yields then decline through 28 years of ownership before increasing through 33 years of ownership. After 33 years, student yields are typically below 0.200. The average student yield, irrespective of length of ownership, was 0.488 children per home.

Figure 5

Student Yields by Length of Ownership for Above Median Townhouses/ Condominiums

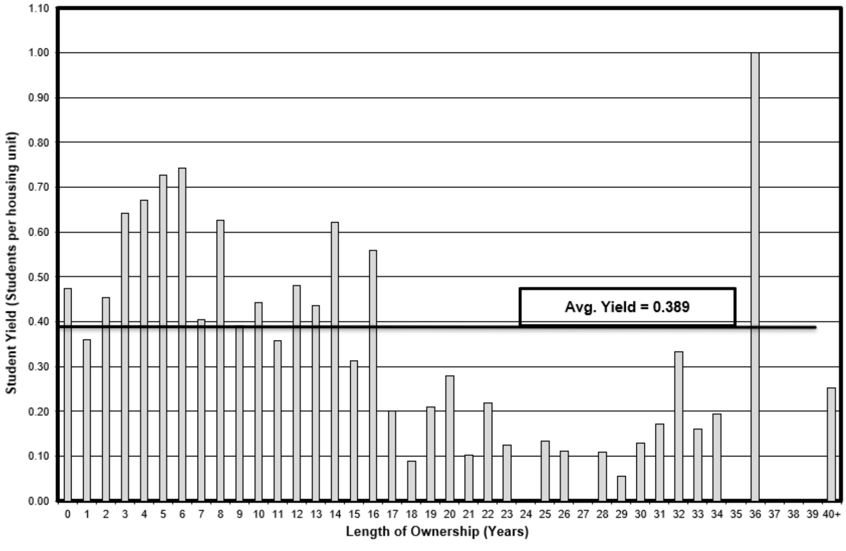


For homes above the median assessment, student yields generally increase through 11 years of ownership, peaking at 0.954 children per housing unit, as shown in Figure 5. Student yields then slowly decline through 15 years of ownership before remaining stable. Yields were typically below 0.300 for homes with more than 20 years of ownership. While it appears that student yields are sharply increasing at 37 and 39 years of ownership, this is a function of the low home counts. The average student yield, irrespective of length of ownership, was 0.585 children per home, as there were 1,089 children living in 1,863[1] townhouses/condominiums.

For homes that are below the median assessment, student yields slowly increase with length of ownership, peaking at 0.742 children per housing unit with six years of ownership, as show in Figure 6.

Figure 6

Student Yields by Length of Ownership for Below Median Townhouses/ Condominiums



If the average student yield is computed for the first four years of ownership when the peak student yield occurs for all townhouses/condominiums, the student yield increases to 0.679 as shown in Table 4. Using a similar process for homes above and below the median assessment results in student yields of 0.862 and 0.554, respectively.

Table 4

Summary of student yields for townhouses/condominiums

Home Price	Average Student Yield	Student Yield by Length of Ownership[1]
Above Median	0.585	0.862
Below Median	0.389	0.554
All Homes	0.488	0.679

Note: [1]Average of student yields computed up to when the peak student yield occurred.

Comparison of Data Resources to Local Analysis

How do the statewide student yields for New Jersey from CDA and CUPR compare with the local student yields for this suburban New Jersey school district? Direct comparison was difficult as CUPR did not have student yields irrespective of the number of bedrooms while CDA's yields were not computed by housing value. For detached single-family 4-bedroom homes irrespective of home value, CDA and CUPR reported student yields of 0.890 and 0.848, respectively, while the student yield from this study for all detached single-family homes irrespective of bedroom count was 0.991 which is slightly higher. What is the significance of a higher student yield? If a developer were to build 200 detached single-family homes in this community, the CDA and CUPR yields would estimate 170-178 new public school children, whereas the yield from this analysis would estimate 198 public school children. If even more units are proposed, the difference in underestimation would be even larger. With respect to single-family attached housing units (townhouses/condominiums), the yield from this study (0.679) is also higher than the CDA (0.562) and CUPR (0.226 – 2-bedroom and 0.477 – three-bedroom) values. It should be noted that the CUPR values are not available irrespective of bedroom type. Using the same hypothetical scenario as above, if a developer were to construct 200 townhouses/condominiums, the CDA student yield would estimate 112 public school children while CUPR would estimate 95 public school children (assuming the higher 3-bedroom student yield), which are lower than the 136 public school children estimated using the student yield from this analysis.

Conclusions

This paper looked at several data resources available to school planners to estimate the number of public school children from new housing developments. While student yield data is available at the state level from CDA or CUPR, student yields computed at the local level are more unique to a community and its demographic attributes. With GIS, one can join a parcel-level property database with a student address database, if available from a school district. In this study, computing student yields by length of ownership generates a much higher value than if the entire housing database is utilized which includes homes owned by all age segments of the population, including empty-nesters and senior citizens, who are not likely to have children in the school district. The average student yield for detached single-family homes was 0.591; however, if length of ownership is considered, it increases to 0.991. Likewise, the average student yield computed for townhouses/condominiums was 0.488 but increases to 0.679 if length of ownership is considered.

Unlike the CUPR student yields, the values computed in this study were higher for those that were above the median assessment as compared to those that were below. In addition, the local student yields were higher in magnitude than those from CDA or CUPR. While the exact reason is not clear, it may be related to the school district's reputation as families want to have their children educated in an excellent school district. As discussed previously, the community's higher socio-economic status may allow more affluent families to purchase homes so their children could be educated in the school district. However, how would student yields be affected if the community's socio-economic status was lower and did not have as desirable a school district? It is postulated that there would be smaller yields at lower lengths of ownership as fewer families would be moving into the community.

There were several limitations with the data used in this study. First, the number of bedrooms in each type of unit was not available which did not allow for direct comparisons to the values from CDA and CUPR. This could lead to difficulty for school planners in estimating future public school children in proposed developments as developments consisting of three-bedrooms in detached single-family homes would have fewer students than a four-bedroom development. Second, the home's assessment was used as a proxy for home value. Admittedly, assessment values are not always reflective of a home's market value which is the price a willing buyer would pay for a home. Sale prices would have been a better variable to use, but not all of the homes had been sold in the time period when records were kept. While CDA did not consider home value in their computations, CUPR used the housing value variable as provided in the PUMS dataset. In this study, there was a difference in the student yields when the assessed value was considered. For detached single-family homes, the student yield for homes above the median assessment was 1.119 as compared to 0.911 for homes below which is a difference of 0.208 public school children per housing unit. The difference for townhouses/condominiums was even greater as the student yield was 0.862 for homes above the median assessment and was 0.554 for homes below, a difference of 0.308 public school children per housing unit.

Methodologically speaking, the process undertaken here was very similar to the mover sample computed by CDA which used a pre-defined number of years (eight years) as the timeframe to measure households moving into a home. When using length of ownership, computing an average using all of the years up to the peak student yield was performed. In essence, the number of years used in the calculation was not fixed like CDA but depended on the student yield distribution by length of ownership. In the six distributions constructed (three for each housing type), five of six distributions used six or fewer years of ownership in computing the student yield. In short, the number of years utilized to compute the student yield was fairly similar to the CDA timeframe. In closing, it is important for school planners to realize that student yields can vary from one community to the next. Using statewide multipliers may not necessarily capture the characteristics of the population moving into a community. Therefore, when time and resources permit, local data should be used to compute public school student yields.

Table 1

Student Yields by Length of Ownership for Detached Single-Family Homes

Length of Ownership (Years)	All Houses			Above Median Total Assessment
	Housing Units	Students	Student Yield	Housing Units
0	491	414	0.843	224
1	462	403	0.872	232
2	410	389	0.949	191
3	388	408	1.052	197
4	301	328	1.090	160
5	293	327	1.116	153
6	264	327	1.227	120
7	235	263	1.119	101
8	226	259	1.146	111
9	245	285	1.163	112
10	234	262	1.120	118
11	267	283	1.060	149
12	248	250	1.008	116
13	369	372	1.008	196
14	360	301	0.836	175
15	301	240	0.797	190
16	268	207	0.772	157
17	243	188	0.774	140
18	245	126	0.514	149
19	266	120	0.451	168
20	267	116	0.434	187
21	245	68	0.278	162
22	183	41	0.224	106
23	178	44	0.247	108
24	155	27	0.174	84
25	177	40	0.226	87
26	150	19	0.127	94
27	123	15	0.122	87
28	106	9	0.085	59
29	92	8	0.087	58
30	129	4	0.031	73
31	144	13	0.090	76
32	130	11	0.085	72

Table 1 (cont.)

Above Median Total Assessment		Below Median Total Assessment		
Students	Student Yield	Housing Units	Students	Student Yield
224	1.000	267	190	0.712
207	0.892	230	196	0.852
205	1.073	219	184	0.840
213	1.081	191	195	1.021
185	1.156	141	143	1.014
187	1.222	140	140	1.000
159	1.325	144	165	1.146
124	1.228	134	139	1.037
138	1.243	115	121	1.052
150	1.339	133	135	1.015
138	1.169	116	124	1.069
164	1.101	118	119	1.008
122	1.052	132	128	0.970
200	1.020	173	172	0.994
149	0.851	185	152	0.822
154	0.811	111	86	0.775
115	0.732	111	92	0.829
96	0.686	103	92	0.893
70	0.470	96	56	0.583
70	0.417	98	50	0.510
77	0.412	80	39	0.488
52	0.321	83	16	0.193
11	0.104	77	30	0.390
15	0.139	70	29	0.414
8	0.095	71	19	0.268
21	0.241	90	19	0.268
10	0.106	56	9	0.161
8	0.092	36	7	0.194
2	0.034	47	7	0.149
7	0.121	34	1	0.029
1	0.014	56	3	0.054
5	0.066	68	8	0.118
4	0.053	58	7	0.121

Table 1 (cont.)

Length of Ownership	All Houses			Above Median Total Assessment
	Housing Units	Students	Student Yield	Housing Units
33	133	10	0.075	83
34	133	10	0.075	44
35	69	5	0.072	33
36	46	8	0.174	26
37	9	0	0.000	6
38	22	6	0.273	16
39	34	1	0.029	31
40	78	10	0.128	71
41	42	5	0.119	36
42	66	1	0.015	53
43	48	3	0.063	39
44	65	10	0.154	56
45	68	9	0.132	59
46+	2451	510	0.208	747
Total	11422	6749	0.591	5712

Table 3

Student Yields by Length of Ownership for Townhouses/Condominiums

Length of Ownership (Years)	All Houses			Above Median Total Assessment
	Housing Units	Students	Student Yield	Housing Units
0	204	129	0.632	109
1	218	121	0.555	96
2	178	124	0.697	92
3	161	122	0.758	69
4	167	134	0.802	94
5	122	96	0.787	56
6	107	80	0.748	45
7	92	55	0.598	50
8	105	76	0.724	46
9	96	67	0.698	55
10	94	67	0.713	51

Table 1 (cont.)

Above Median Total Assessment		Below Median Total Assessment		
Students	Student Yield	Housing Units	Students	Student Yield
3	0.036	50	7	0.140
1	0.023	49	6	0.122
3	0.091	36	2	0.056
3	0.115	20	5	0.250
0	0.000	3	0	0.000
6	0.375	6	0	0.000
1	0.032	3	0	0.000
5	0.070	7	5	0.714
5	0.139	6	0	0.000
1	0.019	13	0	0.000
0	0.000	9	3	0.333
9	0.161	9	1	0.111
6	0.102	9	3	0.333
153	0.205	1707	357	0.209
3487	0.610	5710	3262	0.571

Table 3 (cont.)

Above Median Total Assessment		Below Median Total Assessment		
Students	Student Yield	Housing Units	Students	Student Yield
84	0.771	95	45	0.474
77	0.802	122	44	0.361
85	0.924	86	39	0.453
63	0.913	92	59	0.641
85	0.904	73	49	0.671
48	0.857	66	48	0.727
34	0.756	62	46	0.742
38	0.760	42	17	0.405
39	0.848	59	37	0.627
51	0.927	41	16	0.390
48	0.941	43	19	0.442

Table 3 (cont.)

Length of Ownership (Years)	All Houses			Above Median Total Assessment
	Housing Units	Students	Student Yield	Housing Units
11	121	82	0.678	65
12	123	76	0.618	71
13	180	113	0.628	95
14	132	86	0.652	66
15	98	31	0.316	50
16	74	37	0.500	40
17	85	25	0.294	45
18	67	12	0.179	33
19	65	22	0.338	46
20	87	28	0.322	44
21	117	23	0.197	68
22	75	16	0.213	43
23	50	11	0.220	34
24	38	6	0.158	30
25	29	4	0.138	14
26	24	5	0.208	15
27	27	3	0.111	16
28	48	4	0.083	11
29	41	7	0.171	23
30	82	12	0.146	51
31	104	17	0.163	34
32	64	13	0.203	37
33	85	22	0.259	54
34	74	14	0.189	38
35	19	0	0.000	19
36	14	1	0.071	13
37	4	4	0.000	4
38	26	1	0.000	26
39	11	6	0.000	11
40+	162	40	0.247	4
Total	3670	1792	0.488	1863

Table 3 (cont.)

Above Median Total Assessment		Below Median Total Assessment		
Students	Student Yield	Housing Units	Students	Student Yield
62	0.954	56	20	0.357
51	0.718	52	25	0.481
76	0.800	85	37	0.435
45	0.682	66	41	0.621
16	0.320	48	15	0.313
18	0.450	34	19	0.559
17	0.378	40	8	0.200
9	0.273	34	3	0.088
18	0.391	19	4	0.211
16	0.364	43	12	0.279
18	0.265	49	5	0.102
9	0.209	32	7	0.219
9	0.265	16	2	0.125
6	0.200	8	0	0.000
2	0.143	15	2	0.133
4	0.267	9	1	0.111
3	0.188	11	0	0.000
0	0.000	37	4	0.108
6	0.261	18	1	0.056
8	0.157	31	4	0.129
5	0.147	70	12	0.171
4	0.108	27	9	0.333
17	0.315	31	5	0.161
7	0.184	36	7	0.194
0	0.000	0	0	0.000
0	0.000	1	1	1.000
4	1.000	0	0	0.000
1	0.038	0	0	0.000
6	0.545	0	0	0.000
0	0.000	158	40	0.253
1089	0.585	1807	703	0.389

Endnotes

1 While one would expect the total number of homes that are above and below the median assessment to be fairly equal in size, there were a large number of homes (n = 54) assessed at the median value, which were grouped with those homes that were above the median assessment.

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