

Frederick County Pupil Yield Study

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Student Information Data from Frederick
County Public Schools

Introduction

Frederick County Public Schools (FCPS) and the County Planning & Permitting Division have used pupil yield factors since the 1980's for various comprehensive planning and capital facility planning purposes. In 1998, FCPS conducted a detailed student survey to help develop pupil yield factors by individual school attendance areas. Since that time, the County conducted updates to the pupil yields in 2005, 2007, and 2014 (utilizing 2012 data).

Beginning in 2014, the pupil yield data utilized Geographic Information System (GIS) mapping to align dwelling types with student data more accurately than through individual student surveys. Currently, the County conducts a comprehensive study to update the pupil yield factors approximately every two years. The most recent completed update occurred in 2017.

The County initiated a Pupil Yield Study update in 2019, utilizing an extract of geocoded FCPS student data as of January 31, 2019. The updated 2019 pupil yield factors should replace the 2017 pupil yield factors, effective December 30, 2019.

Data

Current information for student grade levels and addresses comes from FCPS through the FCPS Student Information System, which is then geo-coded. Student counts are determined by where the student lives, rather than where the student attends school.

The County GIS office utilizes and maintains a Housing Unit Inventory (HUI) file. The HUI is a point file with each point representing a housing unit within the County and all of the municipalities, except the City of Frederick and the City of Brunswick. Only post-2010 housing units for the City of Frederick are represented in the HUI. All housing units are represented in the HUI except for pre-2004 multi-family units, for the City of Brunswick. The inventory is updated on a regular basis based on permit information for new residential dwellings and demolition permits. The County removes known active adult communities from the HUI, since no students are generated, and only residences that have obtained a certificate of occupancy are counted.

Calculating the Pupil Yield Factors

The County's GIS team developed two models to conduct the study. One model counted each pupil point by dwelling type for each school attendance area which yielded a count of pupils per dwelling type per school attendance area. The second model applied the HUI and Frederick City Data of Housing Units to calculate the total number of each dwelling type for each school attendance area.

Based on the three dwelling types (single family, town house, and multi-family) pupil yield factors were calculated for each school attendance area as follows:

$$\begin{aligned} & \text{Total number of pupils (for each grade level)} \\ & \div \\ & \text{Total number of dwellings (for each type)} \\ & = \\ & \text{Pupils/dwelling (for each grade level and dwelling type)} \end{aligned}$$

The basic methodology for determining pupil yield rates reflects the number of students within the particular school district compared to the total number of dwellings in that school district.

This methodology provides an average pupil yield rate, since not every new home that is built generates school age children. For the purposes of this study: single-family detached dwellings include mobile homes; townhouse dwellings include duplex dwellings; and, multi-family dwellings include condominiums and apartment (rental) units. This study also includes a unique pupil yield rate specifically for two-over-two dwellings.

Data Anomalies

The utilization of GIS and updated methodologies gives us the ability to match the dwelling type with the number of students at a specific residence. However, anomalies for individual school districts may remain, such as when a school attendance area does not have a particular dwelling unit type, or when a school attendance area does not have any students in a particular dwelling type. In these two scenarios, the countywide average for that grade level and dwelling type is applied.

Another anomaly occurs when there are more students attending within a school attendance area than the number of dwelling units for a particular dwelling unit type. This would result in a pupil yield factor of greater than one (1). This would also result in the use of the countywide average for that school attendance area and particular dwelling type.

2019 PUPIL YIELD RATES

The table below summarizes the countywide pupil yield rates for 2019 and provides a comparison with prior studies. A detailed list of the pupil yield rates by school district and dwelling type is also included in this report. In general, the countywide average of the 2019 pupil yield rates changed slightly compared to the 2017 pupil yield rates.

- At the elementary school level, single family and townhouse pupil yield rates decreased slightly while the multi-family rate increased slightly. This could be the result of more students living in multi-family units than in 2017, or it could also indicate an increased availability of this type of dwelling unit with students as compared to 2017.
- At the middle school level, all dwelling unit types saw a slight increase in pupil yields. At the high school level, the rate is virtually unchanged when compared to 2017.
- The pupil yield rates for two-over-two dwellings have declined from 2017 at all grade levels.
- The school with the highest overall pupil yield rate is Centerville Elementary at 0.42 (down from 0.50 in 2017). The school with lowest overall rate is TJ Middle at 0.06 (same as in 2017). Schools with highest rate overall are:
 - Centerville ES (0.42)
 - Urbana MS (0.19)
 - Urbana HS (0.19)

Current and Past Countywide Pupil Yield Rates

Dwelling Type	Study Year	Elementary	Middle	High	All Grades
Single Family	1998	.23	.14	.18	.56
	2005	.24	.13	.18	.56
	2007	.23	.13	.18	.54
	2012	.21	.11	.16	.48
	2017	.20	.10	.14	.45
	2019	0.19	0.11	0.15	0.45
Townhouse	1998	.20	.08	.09	.37
	2005	.24	.10	.13	.47
	2007	.24	.10	.13	.47
	2012	.26	.09	.12	.49
	2017	.27	.11	.13	.52
	2019	0.24	0.12	0.13	0.49
Multi-Family	1998	.06	.02	.02	.10
	2005	.05	.02	.02	.09
	2007	.05	.02	.02	.09
	2012	.11	.03	.05	.20
	2017	.13	.04	.05	.22
	2019	0.12	0.05	0.06	0.23
All Dwellings	1998	.20	.11	.14	.45
	2005	.21	.11	.15	.48
	2007	.21	.11	.15	.46
	2012	.20	.09	.13	.44
	2017	.20	.09	.13	.42
	2019	0.19	0.10	0.13	0.42

**2019 Pupil Yield Rates (Effective Dec. 30, 2019*)
Frederick County Public Schools**

Elementary Schools	Single-Family	Townhouse	Multi-Family	Total
Ballenger Cr ES	0.21	0.23	0.13	0.19
Brunswick ES	0.22	0.19	0.09	0.20
Butterfly Ridge ES	0.18	0.51	0.16	0.20
Carroll Manor ES	0.19	0.44	0.13	0.19
Centerville ES	0.41	0.44	0.33	0.42
Deer Crossing ES	0.32	0.27	0.05	0.31
Emmitsburg ES	0.13	0.17	0.17	0.14
Glade ES	0.24	0.28	0.10	0.24
Green Valley ES	0.17	0.20	0.12***	0.17
Hillcrest ES	0.42	0.32	0.45	0.37
Kempton ES	0.22	0.24**	0.25	0.22
Lewistown ES	0.12	0.50	0.13	0.13
Liberty ES	0.14	0.63	0.05	0.14
Lincoln ES	0.17	0.20	0.15	0.17
Middletown ES and PS Total	0.21	0.36	0.10	0.21
Monocacy ES	0.18	0.27	0.19	0.22
Myersville ES	0.16	0.17	0.15	0.16
New Market ES	0.24	0.19	0.12***	0.24
New Midway/Woodsboro ES	0.15	0.08	0.09	0.14
North Frederick ES	0.17	0.14	0.06	0.11
Oakdale ES	0.23	0.23	0.12***	0.22
Orchard Grove ES	0.20	0.24	0.09	0.17
Parkway ES	0.10	0.06	0.05	0.07
Sabillasville ES	0.11	0.37	0.17	0.12
Spring Ridge ES	0.17	0.15	0.04	0.11
Thurmont ES and PS Total	0.14	0.23	0.08	0.14
Tuscarora ES	0.27	0.27	0.11	0.24
Twin Ridge ES	0.18	0.19	0.08	0.18
Urbana ES	0.22	0.31	0.16	0.24
Valley ES	0.16	0.35	0.11	0.16
Walkersville ES	0.17	0.18	0.08	0.16
Waverley ES	0.29	0.33	0.35	0.33
Whittier ES	0.16	0.31	0.08	0.17
Wolfsville ES	0.12	0.24**	0.12***	0.12
Yellow Spring ES	0.19	0.32	0.12***	0.20
Countywide Average	0.192	0.240	0.120	0.19
Middle Schools	Single-Family	Townhouse	Multi-Family	Total
Ballenger Cr MS	0.11	0.14	0.06	0.11
Brunswick MS	0.10	0.09	0.03	0.10
Crestwood MS	0.10	0.11	0.05	0.09
Gov TJ MS	0.10	0.08	0.01	0.06
Middletown MS	0.10	0.16	0.06	0.10
Monocacy MS	0.10	0.15	0.09	0.11
New Market MS	0.11	0.11	0.05	0.11
Oakdale MS	0.16	0.12	0.05***	0.15
Thurmont MS	0.07	0.10	0.05	0.07
Urbana MS	0.20	0.20	0.09	0.19
Walkersville MS	0.11	0.11	0.05	0.10
West Frederick MS	0.08	0.14	0.05	0.09
Windsor Knolls MS	0.10	0.11	0.10	0.10
Countywide Average	0.109	0.123	0.049	0.102
High Schools	Single-Family	Townhouse	Multi-Family	Total
Brunswick HS	0.13	0.10	0.04	0.12
Catoctin HS	0.10	0.12	0.06	0.10
Frederick HS	0.12	0.13	0.06	0.10
Gov TJ HS	0.13	0.10	0.06	0.10
Linganore HS	0.15	0.13	0.06***	0.15
Middletown HS	0.15	0.18	0.04	0.14
Oakdale High	0.20	0.12	0.04	0.17
Tuscarora HS	0.15	0.13	0.08	0.13
Urbana HS	0.21	0.16	0.11	0.19
Walkersville HS	0.14	0.12	0.04	0.12
Countywide Average	0.15	0.13	0.06	0.13
Countywide Average all Schools	0.447	0.490	0.228	0.420
2 Over 2 Dwellings	Elementary 0.12	Middle 0.06	High 0.06	0.08

*Data from FCPS Student Information System, January 2019 **Utilized countywide avg. due to limited dwelling types ***Utilized countywide avg. due to no students in housing type