Enrollment Forecasts/Demographics Subcommittee
of the Long-Range Educational Facilities Plan Work Group

Enrollment Research Topic
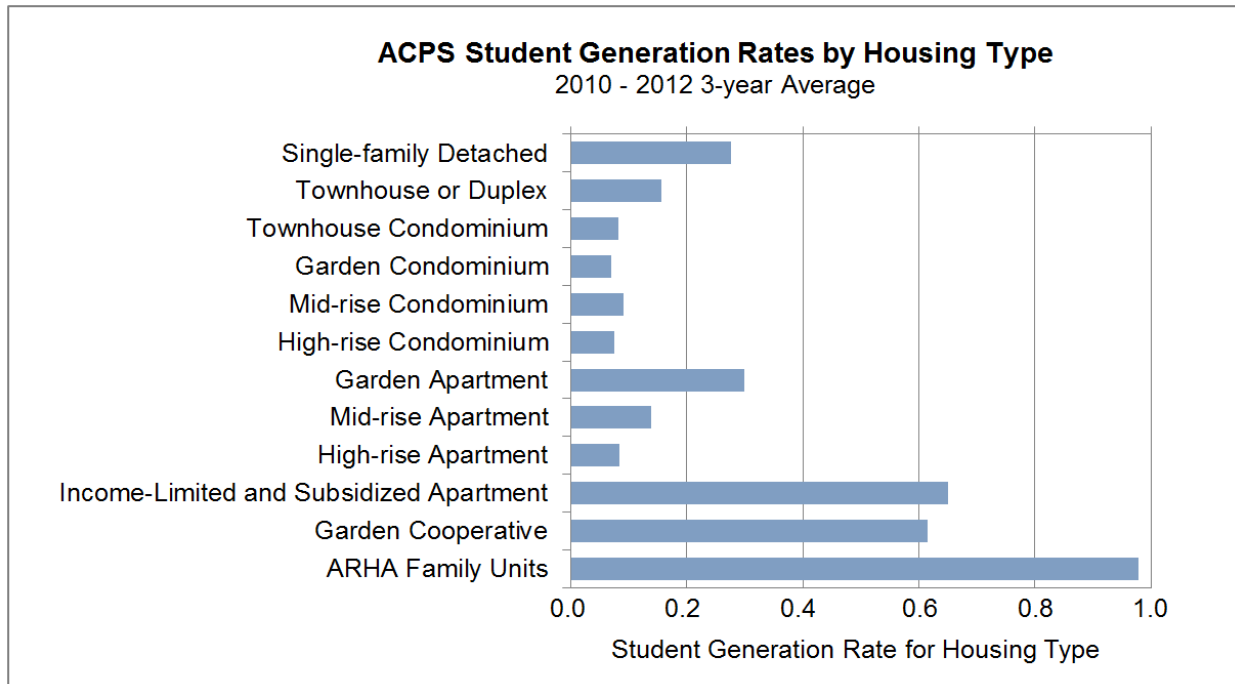Student Generation Rates

Background
The ACPS student generation rate is the ratio of the number of students enrolled in ACPS to the total number of dwelling units in the city. The city has identified specific generation rates for various types of housing, and the effect on generation rates for a variety of housing characteristics including building type (single vs. multi-family, low-rise vs. mid-rise and high-rise), tenancy (owner or rental), unit size and number of bedrooms, building age, value and rent, whether units are rent-subsidized or income-restricted, and whether units are restricted to seniors. The generation rate patterns for various types of housing units and unit characteristics assist in predicting future enrollment for the short term and long term planning horizons as forecasts of demolition and new construction change the expected mix of types of housing in the city.

Methodology
Using the address of every ACPS student, staff was able to map each student to a housing type for the past five school years. (Approximately 5% of students could not be assigned to a city residence address for a variety of reasons, and some housing characteristics were not available for all types of housing.) In conjunction with this data staff analyzed multiple factors that might affect student generation based on characteristics including: housing type, housing affordability programs, market affordability, age of housing stock, and home sales.
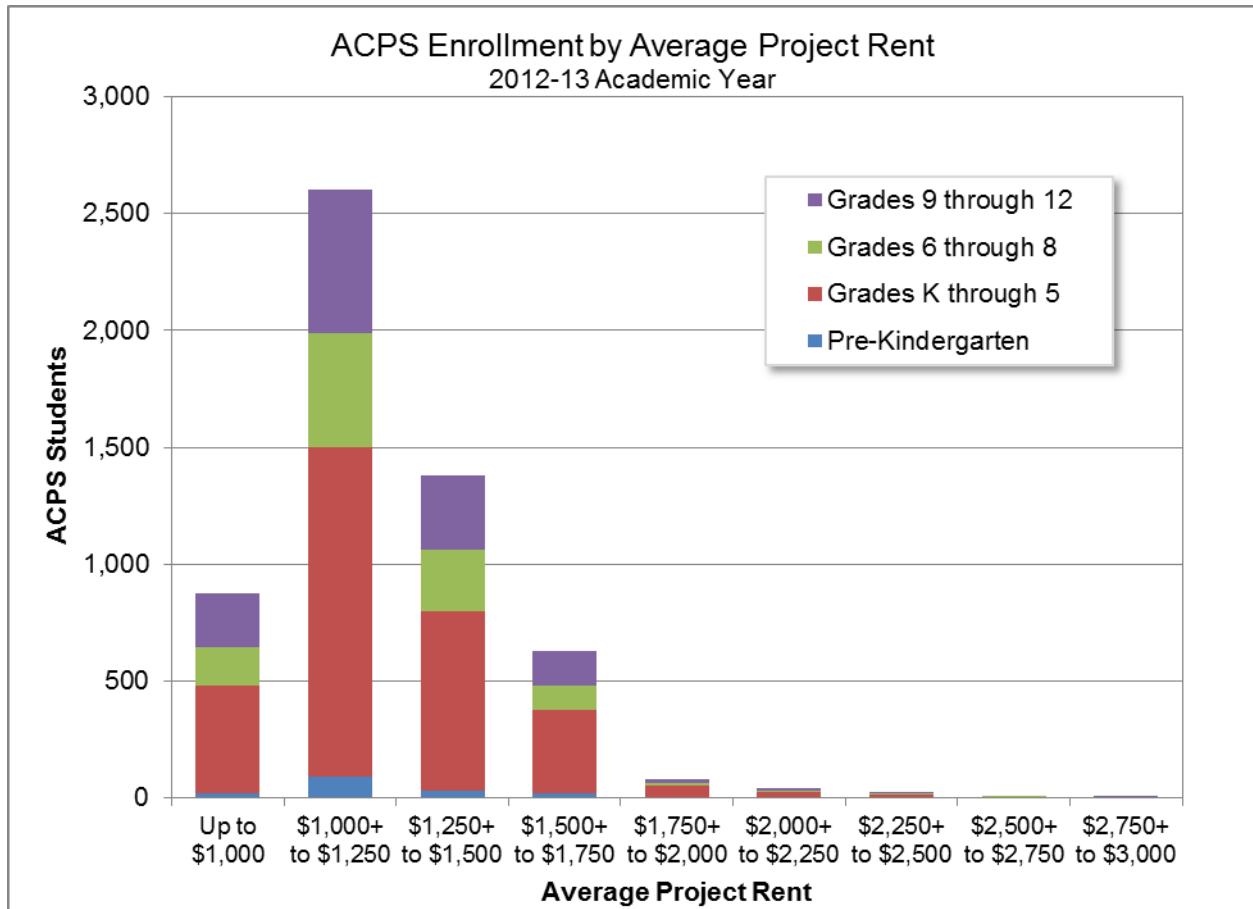
Findings
The current student generation by housing type, averaged over a three year period, indicates that detached single family dwelling units, garden apartments, garden cooperatives, and townhomes are the largest student generators by type. Today's snapshot of the mix of housing types in relation to student generation assists in projecting future student enrollment.

ACPS Student Generation Rates by Housing Type
2010 - 2012 3-year Average

Student Generation Rates – 2010-2012 3-Year Average			
Housing Type	**Total Units**	**Students**	**Student Ratio**
Detached	9,023	2,485	0.275
Townhouse/Duplex	11,996	1,872	0.156
Townhouse Condo	1,561	129	0.082
Garden Condos	7,034	484	0.069
Mid Rise Condos	5,396	489	0.091
High Rise Condos	6,711	498	0.074
Garden Apartments	10,857	3,253	0.300
Mid Rise Apartments	8,507	1,171	0.138
High Rise Apartments	10,811	913	0.084
Income-Limited and Subsidized Apartments[1]	1,910	1,242	0.650
Garden Cooperative	335	206	0.616
ARHA Family Units	788	771	0.978
Note: 3 year average includes 2012-13, 2011-2012 and 2010-2011 school years with GIS building data from November 2011 and 2012 1. Income-limited and subsidized rentals evaluated for 2012 only.			

Affordability was found to be a key determinant of student generation for most housing types. Student generation is highest for housing with the lowest values and rents, which applies to both programmed affordable housing (subsidized and income-restricted) and market-rate dwellings. The findings from this analysis indicate that future student generation may depend in part on changes in the affordability of the City's housing stock over time. To the extent that less expensive housing is eliminated through redevelopment, rehabilitation, or price or rent increases, households with school-age students are likely to choose housing in other areas. As the existing housing stock and newly developed housing becomes more affordable as it ages, the City will continue to provide housing that families find affordable and will see student growth parallel population growth. To the extent that the City continues to support income-limited and subsidized housing and encourages such housing to be provided in new developments or through voluntary affordable housing contributions, the share of students from such units will remain similar to that today with the growth in housing units and population.

ACPS Enrollment by Average Project Rent
2012-13 Academic Year

Legend:
- Grades 9 through 12
- Grades 6 through 8
- Grades K through 5
- Pre-Kindergarten

Y-axis: ACPS Students (0 to 3,000)
X-axis: Average Project Rent (Up to $1,000; $1,000+ to $1,250; $1,250+ to $1,500; $1,500+ to $1,750; $1,750+ to $2,000; $2,000+ to $2,250; $2,250+ to $2,500; $2,500+ to $2,750; $2,750+ to $3,000)

The graph above shows the total number of ACPS students generated by rental units with various average rents listed in the Office of Housing's annual apartment survey. (Average rent in the analysis was based on a single number for each project and is not based on individual unit rents. Average project rent was based on the weighted average of the midpoints of the range of rents for efficiencies, 1-bedroom, 2-bedroom and 3-or-more-bedroom units in each project.)

- Rental units with rents averaging $1,750 per month or more generated less than 0.05 students per dwelling unit. At rents up to $1,500 per month, rental units generated an average of 0.2 students per dwelling unit or more.
- Condominiums, even at low assessed valuation, generate substantially fewer students per unit than single-family attached (townhouses) or detached or duplex units. At valuations greater than $200,000 per unit, condominiums generated less than 0.05 students per unit (1 student per 20 dwelling units). All other ownership units combined generated more than 0.15 students per dwelling unit up to a valuation of $1.5 million. All condominium units are classified as ownership units in the analysis, whether or not the individual condominium unit is rented.
- Townhouses with values above $450,000 generate 0.1 students per unit or less except for a very few high-value townhomes. This is substantially fewer students per unit than single-family detached housing units, which generate more than 0.2 students per unit up to an assessed value of $1.5 million.
- Income-limited and subsidized housing units, public housing units and cooperative apartments generate the highest number of students per dwelling unit in the city, in part because such limits and subsidies are often focused on housing affordability problems of families with children. Public housing family units were found to generate nearly one student per dwelling unit, while

subsidized and income-limited apartments were found to generate approximately 0.65 students per dwelling unit.

- Based on an analysis staff conducted comparing new students and real estate data on home sales, whether a home had been recently purchased did not directly influence student generation.
- Student generation varies depending on the area of the City because of the variation in housing type and rent. Redevelopment planned in the West End is expected to result in a reduction of students because the housing to be demolished has relatively high student generation and the new units are expected to generate at a much lower rate for many years. New development in Potomac Yard will generate new students to the division since no units will be demolished. The net effect across the City was determined to be approximately neutral in the 2012 short-term enrollment projection. However, since reductions were expected in some parts of the city balanced by increases in other areas, it is important for projections of school enrollment to use individual school enrollment areas as the level of analysis.

Summary

As the mix of housing types evolves within the City, such as through the conversion of garden apartments to mid-rise or high-rise units and the overall increase of multifamily units, the City and School Board can utilize updated generation rate calculations to track and forecast division-wide and site-specific changes in the student population.

Changes in kindergarten capture and cohort survival affect the generation rates of all units over time, but may change generation rates in some types of units more than others.

Resources

Generation Rate: ACPS student addressing data was utilize to map the location of each student and identify the student's housing type over a 5 year period. Approximately 95% of students were associated with a valid residential address in Alexandria for this analysis.

Housing Types and Unit Size. The City's GIS buildings layer was used to identify housing type and building age, and was used to identify unit size for single-family and duplex housing units.

Housing unit value. The City's GIS real estate data was used to identify individual housing unit value for condominiums and single-family and duplex units.

Apartment rent. The Office of Housing's annual apartment survey for 2013 was used to calculate average rent for apartment projects including 28,771 rental units.

Subsidized and income-limited housing units. The Office of Housing's data base of income-limited and subsidized units was used to identify apartment projects that include units limited to low- and moderate-income tenants.

Public housing units. The City's GIS buildings layer and GIS real estate condominium tables were used to identify public housing units.