ACPS Enrollment Forecasting Research Plan Matrix

		Birth Rates		Capture Rates		Cohort Survival		Student Generation	
Short Term Trends	Current	***Alexandria Birth Rates*** :Births per 1,000 residents 2011 - 18.3 2012 - 17.8	↓	***ACPS*** **:** Kindergarten Capture Rate SY 11/12 - 64.1% SY 12/13 - 66.2%	↑	***ACPS*** **:** Average Cohort Survival SY 11/12 - 97% SY 12/13 - 99%	↑	***ACPS*** **:** Total Student Enrollment SY 11/12 - 12,395 SY 12/13 - 13,114	↑
	Past 5 Yrs	***Alexandria Birth Rates:*** Births per 1,000 residents 2008- 19.5 2012 - 17.8	↓	***ACPS*** **:** Kindergarten Capture Rate SY 08/09 - 55.5% SY 12/13 - 66.2%	↑	***ACPS*** **:** Average Cohort Survival SY 08/09 - 101% SY 12/13 - 99% SY03-07 Avg 94.2% SY08-12 Avg 98.6%	↑	***ACPS*** **:** Total Student Enrollment SY 08/09 - 11,225 SY 12/13 - 13,114	↑
Long Term Trends	Findings that support long term assumptions	**(P3)** ***National Birth Rate Trends:*** Slowdown in births projected due to aging population, fewer women in childbearing years, and overal decline in birth rates across ethnicities.	↓	**(P5)** ***ACPS Student Participation Rate*** **:** Use to establish upper and lower bounds of likely student participation rates moving forward.	↔	**(P7)** ***ACPS Historic Cohort Survival:*** Average cohort survival rate (CSR) went from 93% in SY 06/07 to 99% in SY 12/13. Students are leaving ACPS at a slower rate. Largest gains of 15% in grades 9 & 10.	↑	***(P1) Student Generation by housing type:*** The most significant finding is that units built after 2000 generate substantially lower numbers of students per unit than those built prior to 2000.	↓
		(P3) ***Alexandria Birth Rate Trends*** **:** The City's unique urban profile and unusually large proportion of residents age 20 to 35 could blunt overall downward pressure and cause birth rates to remain stable.	↔	***(I2) ACPS Reputation:*** If or how school/system reputation affects enrollment.		**(P7)** ***Cohort Survival Deep Dive:*** Tracking CSR by individual students to provide information on year-to-year stability of student population.		**(P1)** ***Student Generation in Housing Affordability Programs*** **:** Subsidized housing generates more students per unit than the average of all other housing types. However these units house only a small % of students.	↔
				(I4) ***Availablity of Alternatives:*** How do alternatives such as private schools, charter schools, home schooling, and schools in other jurisdicitons impact ACPS enrollment?		**(I4)** ***Programmatic Initiatives*** **:** How will ACPS programing initiatives affect enrollment?		**(P1)** ***Student Generation by Market Affordability:*** All housing types generate the most students at the lowest prices and rents.	
						(P7) ***Neighborhood School CSR***		**(P4)** ***Home Sales and New Students:*** Home sales are not a major contributor to new student generation in ACPS.	
								(P1) ***Change in affordability:*** Do housing units become more affordable over time as they age and therefore generate greater numbers of students?	
								(P4) ***Net Migration*** **:** Are residents more or less likely to leave Alexandria after their children reach school age?	
								(P8) ***Size of dwelling units*** **:** Is unit size a factor in determining student generation separate from other factors including affordability?	
								(P6) ***Household profiles of ACPS students*** **:** Will help understanding of who is likely to be having children and attending ACPS.	

Key

- Research Complete
- Presenting Research
- Research Ongoing

Impact on Enrollment Trends:
up ↑ down ↓ no impact ↔

	Births/Birth Rate		Capture Rates		Cohort Survival		Student Generation	
Short Term Assumptions		TBD		TBD		TBD		TBD
Long Term Assumptions		TBD		TBD		TBD		TBD

Timing	ID	**Predictors -** Predictors are factors where the effect on enrollment can be quantified and forecast.		
		Why is this important?		***How will we study it?***
July	*P1*	***Housing stock – affordability:*** A general observation of student generation data indicates a relationship between housing affordability and student generation. More affordable units appear to generate higher numbers of students, even when the structure classification is similar. Since some assumptions about trends in housing affordability changes can be made, changes in student generation may follow; this may also inform kindergarten capture rate as affordability affects whether families stay in Alexandria once they have children.		***Affordable Housing Program:*** Update building records to classify all residential structures by affordable housing (source: annual Apt. Survey), including public housing, Section 8 units, acceptance of Section 8 vouchers, and various rent supplement or owner assistance programs. Recalculate student generation rates for each housing category based on affordability category for the years for which student records are currently linked to residential structure records.
August				***Market Affordability of Housing Stock:*** Update building records to include assessor's market value of ownership housing and range of rents for rental housing (source: annual Apt. Survey). Evaluate the importance of market affordability on student generation factors within various categories, ages and locations of housing stock for the years for which student records are currently linked to residential structure records (3 years of student data).
September				***Evaluate changes in the importance of affordability over time in student generation:*** Add student records from selected prior years (e.g., 2000, 1995) to currently available address-matched student generation records to see how Alexandria student generation rates vary by type, location, housing affordability programs and market affordability of housing units.
September	*P2*	***Job growth:*** Future job growth may help predict changes in household type. A review of forecast shifts in job by industry and comparison to data showing household types that typically fill jobs in those industries should help us forecast shifts in household types in Alexandria. This will be used to show if the percentage of household types that typically has school age children will grow or decline.		Use existing Bureau of Labor Statistics jobs data to generate a jobs profile by sector for Alexandria and the surrounding jurisdictions (limited to those that have the most workers who live in Alexandria.) Use ACS data generate a household profile for each sector (income, family size etc.) Proportionally apply household profiles to job forecast growth by sectors to estimate change in household type and future student generation.
July	*P3*	***Birth rates trends:*** The number of births is a key element to predicting long term enrollment trends. This predictor will help us understand what national trends are in relation to birthrates and how those trends can help inform trends in Alexandria births.		Review available birth forecasts for state and nation to determine if they can be applied to Alexandria. Review historic birth rates in Alexandria and compare to changes in percentage of female population in childbearing age. Review fertility rate trends in Alexandria.
August	*P4*	***Net migration:*** Study whether people will be more or less likely to leave Alexandria after their children reach school age. Alexandria has traditionally had a lower kindergarten capture rate compared to neighboring jurisdictions. Since 2005 capture rates have been rising, indicating more people are choosing to stay. An analysis of who is moving in and out of the City and why, will help us to predict if there will be a shift back to greater numbers families without children long-term or if the current trend will continue and people will be more likely raise families in Alexandria?		***Who is moving:*** Review 'components of change" data to determine the sources of Alexandria in-migrants? Create demographic profile of mover households – what types of households moved from and to Alexandria in the past decade?
August				***Why people are moving:*** Discuss with real estate professionals the trends in home sales to/from families with children to get a better understanding of how school issues impact housing location choice as well as propensity of parents to choose to raise their children in an urban environment.
August				***Home sales:*** Analyze database that matches the addresses of new students to the addresses of recent home sales to document patterns in student enrollment growth from (some) in-movers.

September	*P5*	***Student participation rate:*** Use to establish upper and lower bounds of likely student participation rates moving forward.		Compare public school enrollment to population as a whole and population of school-age children. Use Census data for 1990, 2000, and ACS since 2003 to examine the characteristics of census tracts with unusually high or low public school participation rates to identify factors that are likely to change participation rates.
September	*P6*	***Household profiles of who attends ACPS:*** Household profiles will help us better understand who is likely to be having children and attending ACPS. This can be used as a predictor of changing trends as these profile groups grow or shrink over time.		Use school enrolment data and current ACS data to develop demographic profiles by school attendance area or similar geography to determine which characteristics (*income, race/ethnicity, country of origin, etc.*) are correlated with having children in the household and having children attend ACPS.
July	*P7*	***Historic cohort survival rate:*** Past trends in cohort survival is a widely used predictor of enrollment trends. Survival rates may reflect school success or migration. Analyzing it geographically; on a by-school basis and comparing to citywide rates may reveal enrollment trends specific to a certain school or the system as a whole.		Use ACPS data for city-wide survival rates. Based on attending school: enrollment numbers, by school by grade, for study period (3+ years).
July/August				Track individual students (confidentiality strictly protected) over time to see when students enter the system, exit the system, duration of stay within the system, and frequency of moves within the City. Do students with similar cohort survival profiles also exhibit other similarities?
September	*P8*	***Size of dwelling units:*** Determine if unit size – including number of bedrooms and floor area – is a factor in determining student generation separate from other factors including affordability. Study whether families with children are becoming more likely to reside in smaller units.		Identify dwelling unit size and number of bedrooms for units in the buildings data base (sources: annual Apartment Survey and Real Estates Assessments). Compare student generation rates from historical student databases to see if smaller but otherwise similar units now have higher student generation rates.
TBD		If student data for year 2005 or earlier is available, determine whether there is evidence that smaller units (1 and 2 bedroom multifamily units) are becoming more popular with families with children.		
		Influencers – Influencers can boost or depress enrollment but are difficult to quantify or forecast		
October	*I1*	***New school buildings:*** The hypothesis is that new buildings (TC Williams, Samuel Tucker) increase student enrollment.		We have limited data in Alexandria because of the small number of new schools. Possibly others have documented this effect. Conduct literature review and follow-up with study authors.
October	*I2*	***Reputation:*** There are a number of metrics that affect a school system (or individual school's) reputation; there are also intangibles since this is fundamentally about public perception.		The metrics can be documented and individuals can be interviewed about their perceptions and both of these are helpful in determining the potential of school enrollment to be positively or negatively affected by this factor in the future. Target 2 groups: pre-k parents & 5th grade parents;
October	*I3*	***Programmatic initiatives:*** These may be initiatives that are explicitly targeted at keeping children in school or may be initiatives that provide a highly-desired program. The effectiveness of some of these programs may have been studied; the results of that analysis may inform the forecast for kindergarten capture and cohort survival.		Interview key staff with long tenures with ACPS about various programs.
October	*I4*	***Availability of alternatives to Alexandria public schools:*** These alternatives include private school, charter schools, home schooling, and schools in other jurisdictions.		This will review the demographics of Alexandria households with children in private school (to the extent available), trends in private school enrollment (supplemented, if possible, with information from private schools), and the potential for a change in regulatory environment that could change the supply of alternatives to public schools in Alexandria.