

Arlington Public Schools Enrollment Growth and Capacity Analysis

May, 2015

Arlington County Civic Federation Schools
Committee

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Views contained herein do not necessarily reflect the view of the Arlington Civic Federation

Executive Summary

- The Arlington County Civic Federation Schools Committee expects that thousands **more seats will be needed** by 2024 than are projected in the APS forecast and CIP.
- At a minimum, the county **must develop plans for likely higher growth scenarios** than in the one APS currently projects.
- **Non-Capital options** as outlined by the APS Master Planning Committee will be necessary, but **will not suffice** to meet the expected enrollment.
- **Relocatables provide diminishing returns.** They were a vital interim strategy to avoid over-building, but now their proliferation comes at increasingly higher budgetary, environmental and quality of education cost without additional accommodations in core services.
- Arlington needs to immediately **accelerate construction** to accommodate projected seat deficits.
- **Bond funds cannot meet anticipated needs for more school seats** even if the county defers projects to free up funds for the schools and school construction costs are reduced.
- **The County must consider all alternatives: proffers, increasing the self-imposed debt limit, enabling legislation for public-private partnerships, development moratoria and more.**

APS Forecasts Are in the Low Range

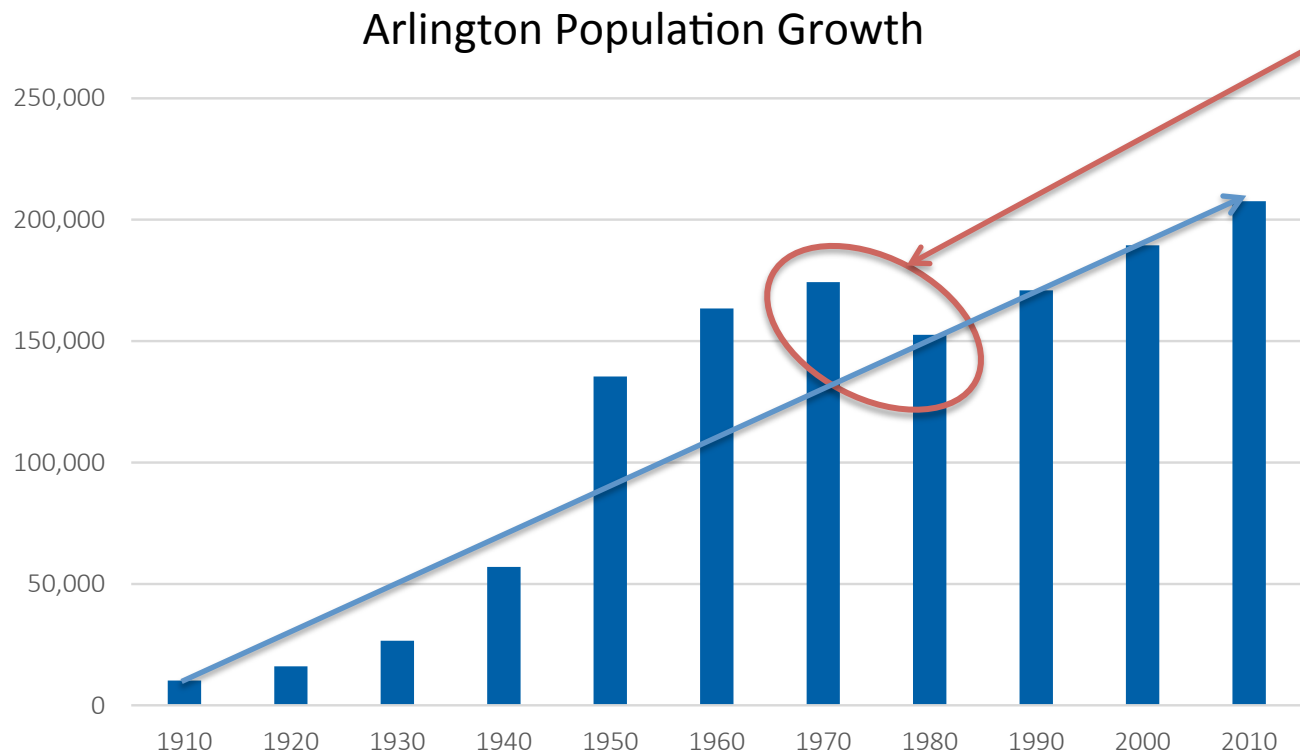
- The vast majority of growth in the APS forecast has already happened
 - Next year grades K-3 will average 2,200 per grade
 - This year's middle school cohort averages 1,640 per grade, so 2020 middle school enrollment increases by over 500 students per grade or 1,500 total
 - In 2024, high school students/grade increases by roughly 660 over this year's 1,539 average for a total increase of more than 2,600
- This growth from already registered/enrolled classes is before additional growth factors that do not appear to be fully reflected in the APS forecast:
 - 1.9% per year growth in Arlington's under 5 Census Population from 2010-2013
 - Growth in births from 2010 through 2014, magnified by growth from 55% to 75% since 2008 in the ratio of kindergarteners to births 5 years earlier
 - Growth trends in both housing units, students per housing unit, young adults approaching parental age, etc.

The Schools Committee believes that the medium-growth-forecast is a very likely scenario and that APS must have contingency building and financing plans for medium- and high-growth possibilities.

Enrollment Growth Drivers

- Population Growth and Increased Density
 - Arlington County is projected to have 283,000 people by 2040.
 - Population, number of housing units *and* people per household are all growing
 - Growing student production factors in 87% of housing (numbers of children by housing type); generational housing turnover may play a role.
 - Much higher growth specifically in the under 9 population
- Growing 'capture rate' from births to students attending public school
- Age trends for household formation and childbirth: increases in maternal age have stopped and Arlington has an exceptionally large number of residents in the 25-34 age groups.
- Relatively fixed number of private school seats

Arlington Has Only Had 1 Decade of Population Loss in Over 100 Years



1970-1980 Population Loss

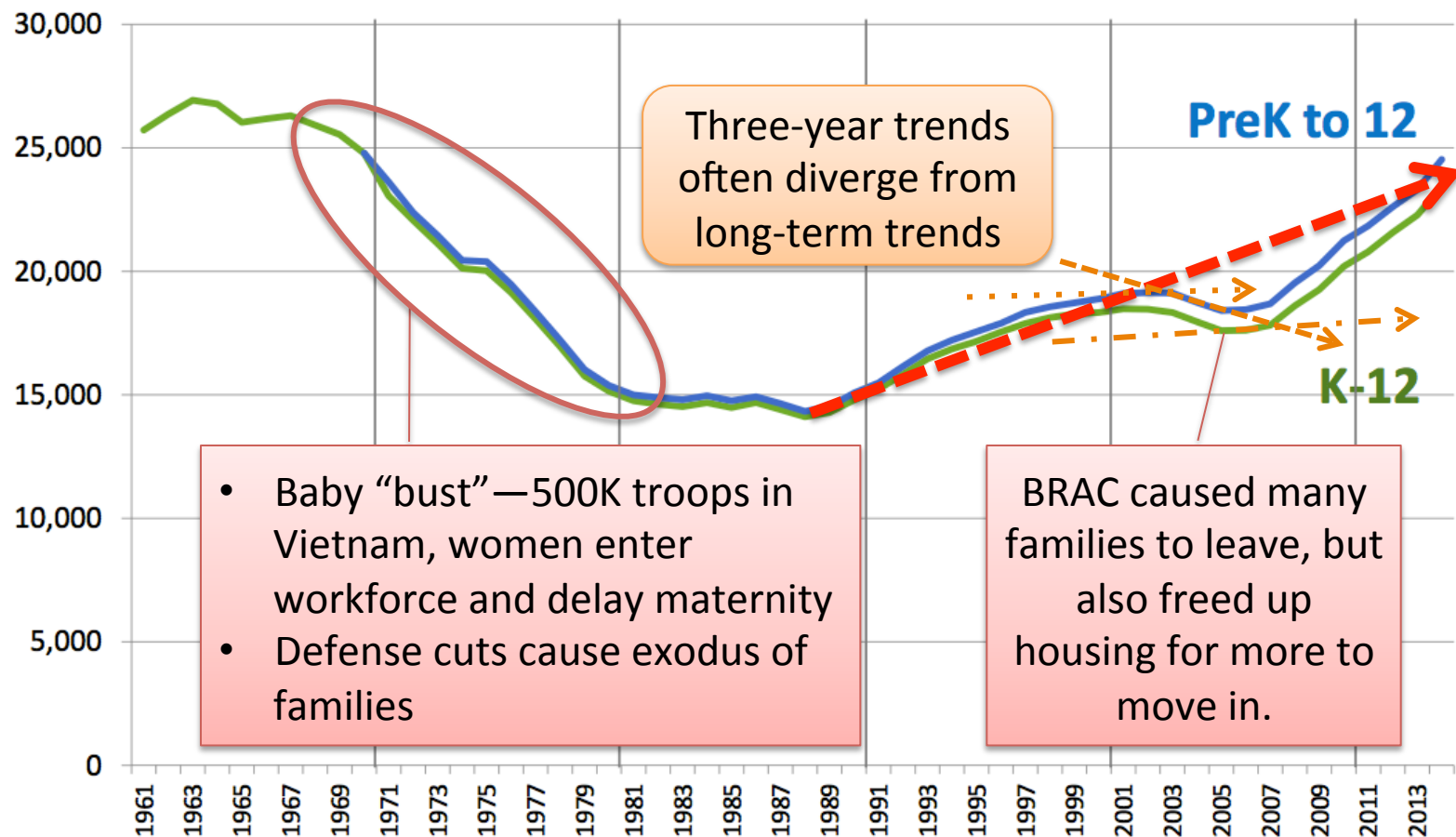
- US DoD cut active duty troops 43%, from 3.5M in FY 1968 to 2.0M in FY '79
- From 1968 to 1975 DoD spending was cut by 30%, or \$169B in 2015 dollars
 - http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2015/FY15_Green_Book.pdf
- Baby Boom post WWII, and “bust” from delayed maternity and smaller families were one-time events
- Arlington has had 35 years of relatively steady population growth

Source: Demographics, Forecasts, And Projection: Companion Document To March 11, 2015 Presentation, Arlington CFS

APS Has a 25 Year Enrollment Growth Trend

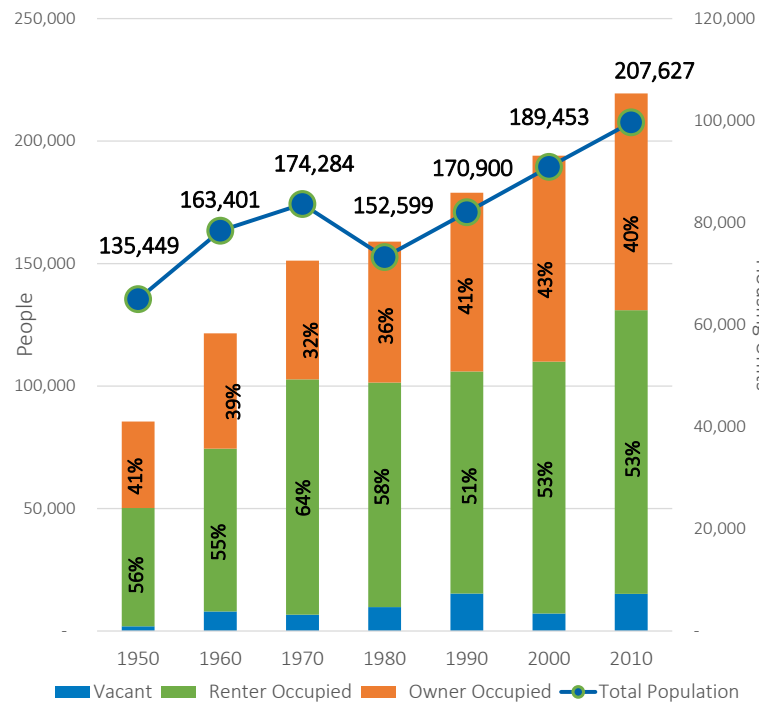
Historic enrollment from 1961 to 2014

Reaching levels last seen in the 1960s



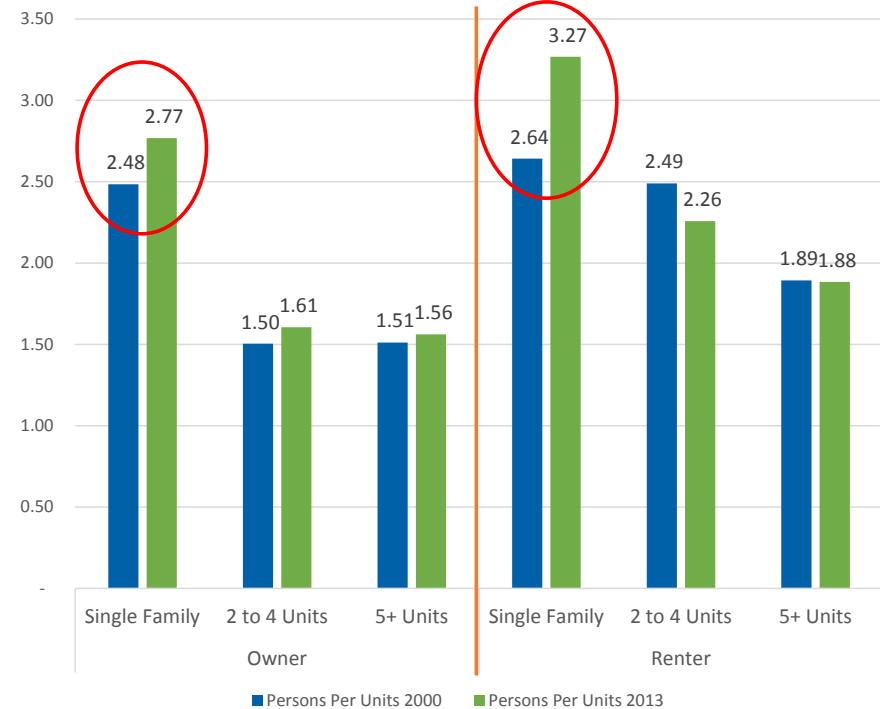
Population, Housing Units and Number of People per Household Are Growing

Population and Housing Unit Growth



Source: Decennial Census 1950-2010

Average Household Size by Units Per Structure



Source: Decennial Census 2000 and 2009-2013 American Community Survey 5-Year Estimates

Source:
Community
Facilities
Study

Existing Arlington Housing Stock Is Producing Large Enrollment Increases

Students Per Housing Unit Trends

Housing Type	2005-06	2008-09	2013-14
Single Family Detached	0.36	0.40	0.42
Duplex	0.45	0.45	0.38
Apartment – Garden	0.25	0.26	0.29
Townhouse	0.10	0.12	0.13
Condo – Garden	0.07	0.07	0.09
Apartment – Elevator	0.06	0.06	0.08
Condo – Elevator	0.04	0.03	0.03

17% increase
over 8 years

16% increase

33% increase

These three types all had significant gains in the student production factor, and produce 87% of APS students

Source:
Community
Facilities
Study

Housing Type	No. K-12 Students	% Students by Housing Type	Housing Units Countywide	% of County Housing Type	Student Generation Factor
Single Family Detached	12,256	55.40%	28,909	27.20%	0.42
Duplex	859	3.90%	2,261	2.10%	0.38
Apartment - Garden	4,751	21.50%	16,236	15.30%	0.29
Townhouse	537	2.40%	4,063	3.80%	0.13
Condo - Garden	1,000	4.50%	11,134	10.50%	0.09
Apartment - Elevator	2,212	10.00%	28,024	26.40%	0.08
Condo - Elevator	521	2.40%	15,690	14.80%	0.03
TOTAL*	22,136	100.00%	106,317	100.00%	0.21

From 2010 to 2013, the Population of Children 9 and Under Grew Much Faster Than Total Population

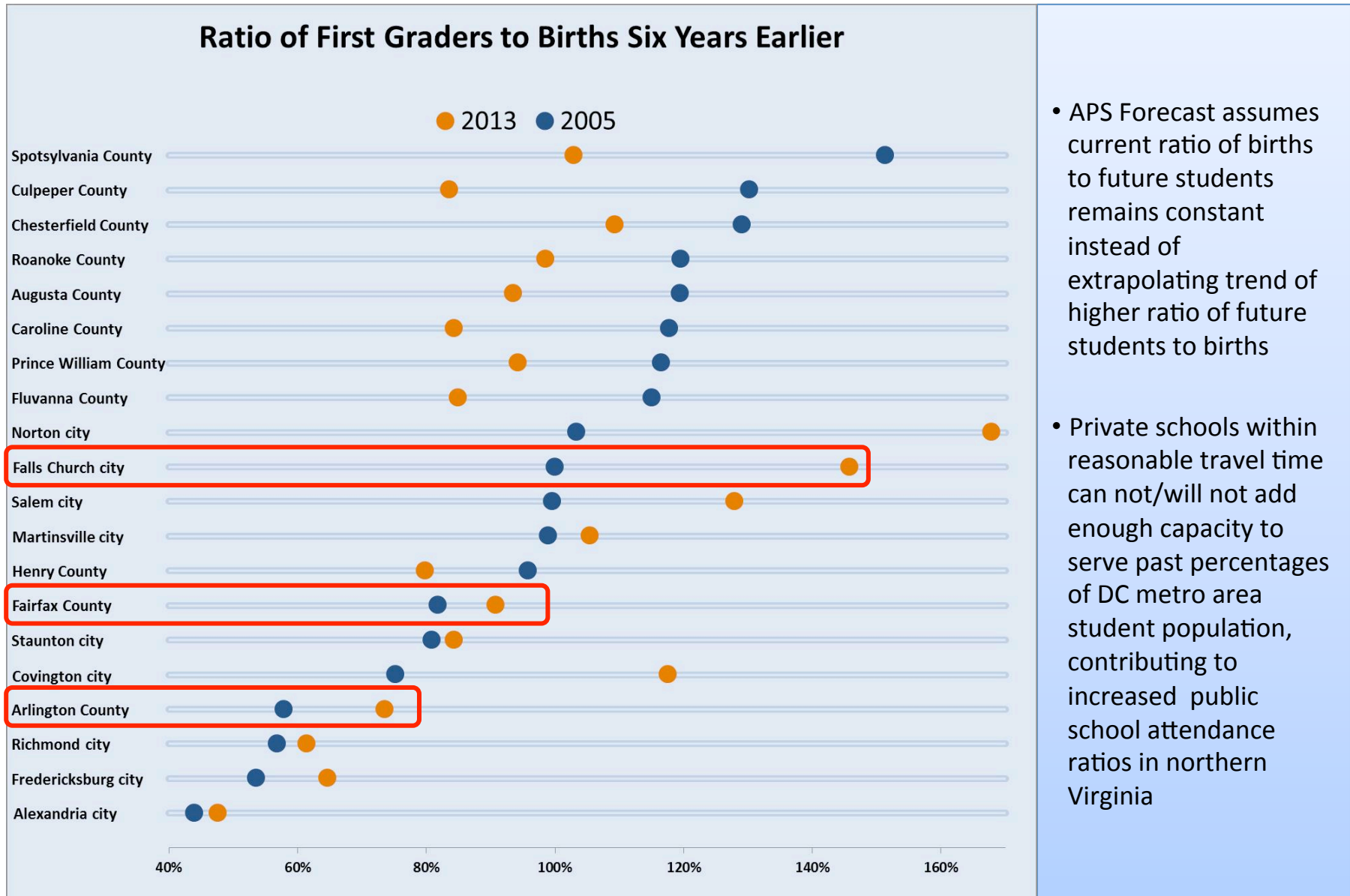
- Growth in Census segments under 5 years old and entering parental age are strong indicators of future APS enrollment growth and seem to contradict the APS projection of no kindergarten growth from 2015 to 2021

School& New Parent Age vs. Total Pop Growth	2000-2013 Growth		2010-2013 Growth		2000-2010 Growth	
	%	CAGR	%	CAGR	%	CAGR
Total population	13.4%	1.0%	3.5%	1.1%	9.6%	0.9%
Under 5 years	19.8%	1.4%	5.7%	1.9%	13.3%	1.3%
5 to 9 years	12.6%	0.9%	7.3%	2.4%	4.9%	0.5%
10 to 14 years	1.4%	0.1%	3.5%	1.2%	-4.3%	-0.4%
15 to 19 years	-2.7%	-0.2%	3.5%	1.2%	-8.7%	-0.9%
Total 5-19	4.1%	0.3%	6.6%	2.2%	-2.3%	-0.2%
Total 0-19	8.9%	0.7%	6.3%	2.1%	2.4%	0.2%
Adults 25-34	25.8%	1.8%	4.4%	1.5%	20.4%	1.9%

- The drop in school-age population from 2000 to 2010 was entirely from the 10-19 group, some of whom may have been college students or construction workers affected by the financial crisis, and/or military families leaving the area because of BRAC and/or Afghan and Iraq wars drawdowns.

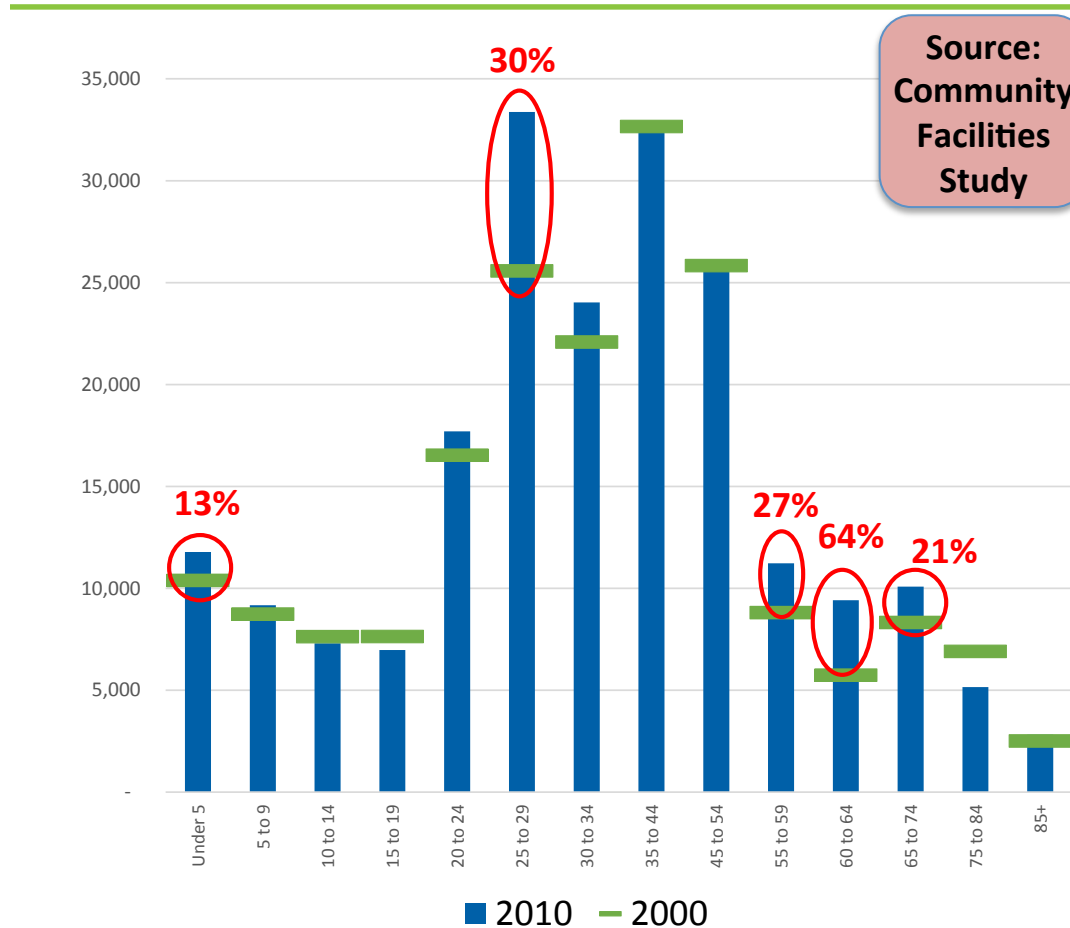
Sources: 2000 and 2010 Decennial Census as well as the 2013 American Community Survey

Higher Percentage of Arlington Babies are Enrolling in School



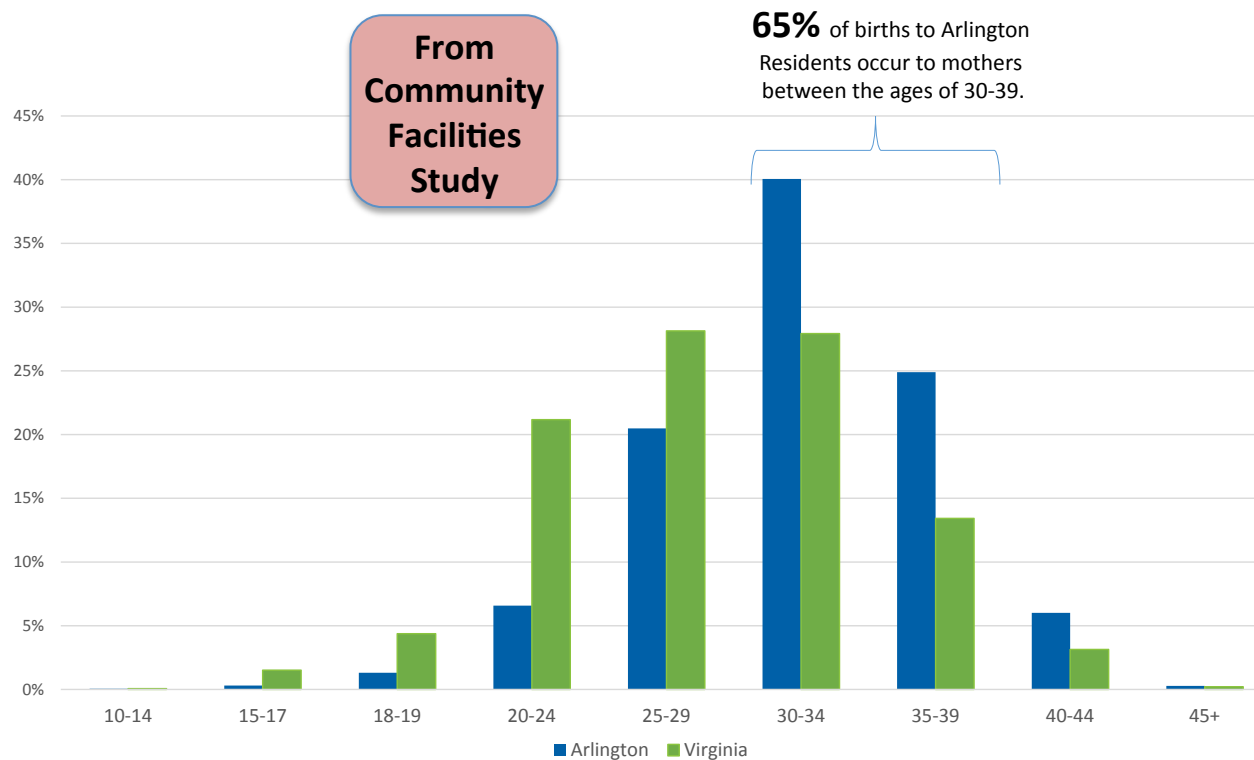
The Largest Numerical Growth in Arlington is Adults 25-29...

Arlington Demographics Age Distribution 2010



...Which is the Age Where Arlington Moms Begin to Have the Vast Majority of Their Kids

Arlington Demographics Birth by Average Age of Mother - 2012



CIP Forecasting Concerns

- From Community Facilities Study Methodology Review of the Grade Progression Ratio method of forecasting for use in 10 year capacity planning (emphasis added):

*“Researchers have debated the predictive ability of GPR; some claim it has a predictive validity for one to two years, others believe it is valid for less than five years, while some state it can be valid for as many as seven years. After one to two years, the projections can be inaccurate since **GPR’s major assumption is a linear trend**, which may not hold true after a few years. GPR uses three inputs to project enrollments: historical enrollments, live births, and new housing.”*

APS’s kindergarten and middle school projections are not consistent with the described methodology

*“Currently, APS annually compares its projected enrollment to actual enrollments only for the first year of the projection period. For example, **the district does not compute error rates for its projections computed four years ago to determine the accuracy of the projections over time**, which would be a longitudinal review. If projections were computed in Fall 2013 for 2014-15 to 2023-24, only the actual enrollment in 2014-15 would be compared to the projected enrollment, which in effect, only looks at the short - term accuracy of the enrollment projection model.....”*

http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/5/2015/04/CFS_SC5_MethodologyReviewReport.pdf

- This means that APS does not even measure its own accuracy over the time frames relevant to a CIP process AND the consultant believes 2% per year or 20% error rates in APS forecasts of total enrollment in year 10 would be likely, and even higher errors likely for projecting elementary, middle and high school

The 2008 CIP projected 2013 elementary enrollment at 9,998. Actual enrollment was 27% higher at 12,710—a delta larger than 4 elementary schools.

Concerns About APS Forecast

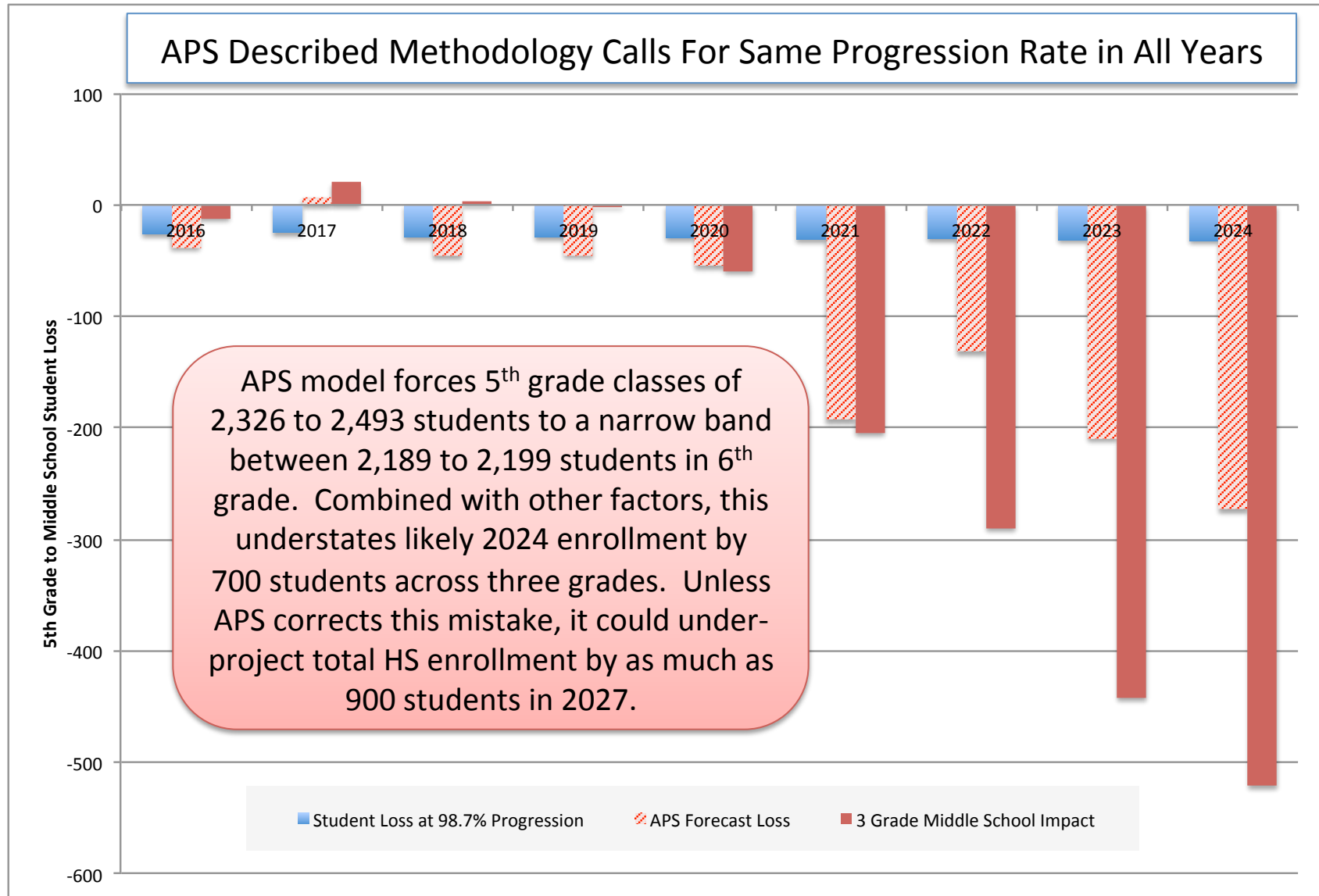
- The vast preponderance of data points to higher enrollment growth than forecast
 - APS enrollment grew 5.2% from 2013 to 2014
 - From 2015 through 2021, APS forecasts no increase in kindergarten enrollment, despite a 4.5% compound annual growth rate over the past 7 years. The most recent 6 Kindergarten classes have been at least 25% larger than the class 6 years prior
 - The APS forecast removes up to 11.1% of students in its forecast between 5th and 6th grade when the recent average loss is only 1.3%, and when combined with other factors may understate middle school projections by as many as 700 students in 2024
 - Sudden changes in medium term projections of cohort progressions are not justified. This disappearance of rising 5th graders masks the need for far more high school capacity to be completed by 2024.
 - APS grew 5.2% last year and averaged 3.7% growth for 4 years, but overall growth rates in the current forecast drop significantly year over year, creating future risk

Projection From Nov 2014 Forecast

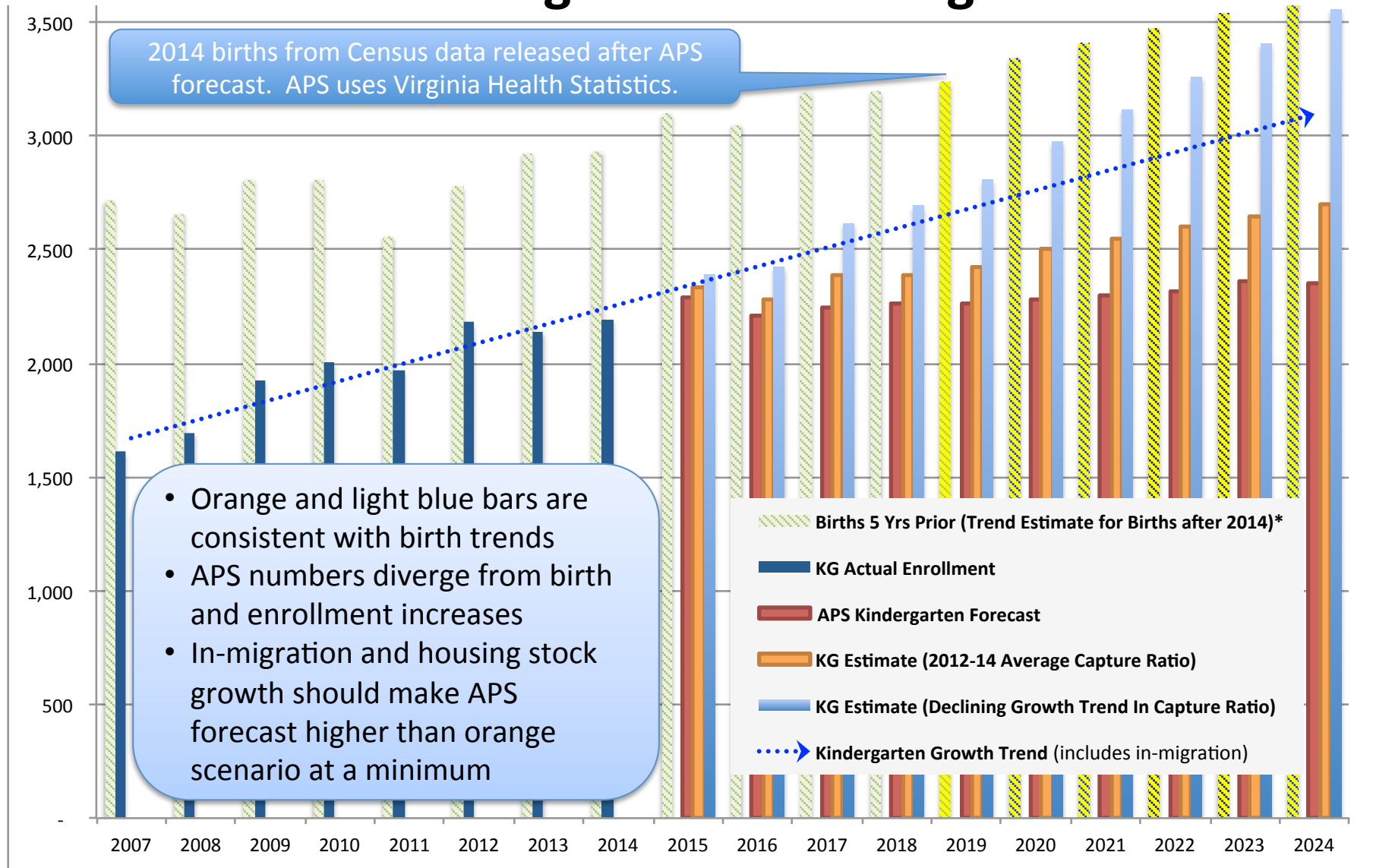
http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/110/FallProjections_2015-2024.pdf

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Enrollment	24,529	25,649	26,568	27,491	28,404	29,188	29,989	30,700	31,314	31,807
Growth	1,213	1,120	919	923	913	784	801	711	614	493
Growth Rate	5.2%	4.6%	3.6%	3.5%	3.3%	2.8%	2.7%	2.4%	2.0%	1.6%

Unusual Decreases From 5th to 6th Grade Reduce 2024 Middle School Production by 520 Students

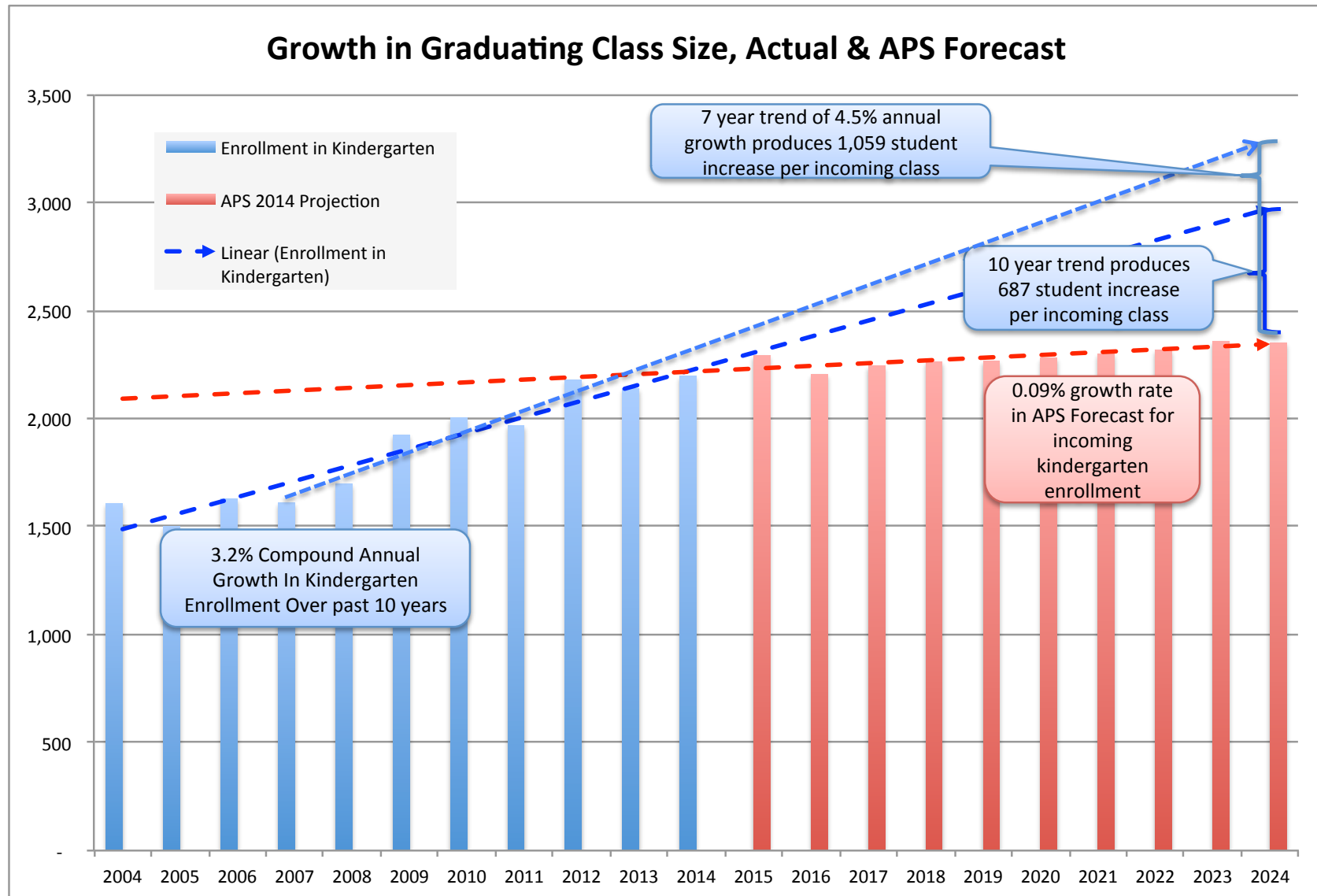


Percentage of Children Born in Arlington Who Enroll in Kindergarten is Growing...



* 2007-13 Birth data from VA. Health Statistics, 2014 from Census estimate, 2015-2024 from 10 year trend line estimate

...But APS Projects Dramatic Drop in Growth of Incoming Classes



Growth Scenarios for Planning

Risk of Growth Exceeding Scenario

Low (APS) Scenario

- Kindergarten from births
 - 2013 and earlier actual births from Virginia Health Statistics
 - 2015+ births not explained by APS
- Stated method: No increase in % of children born enrolling in APS 5 years later
- Kindergarten projection lower than described methodology
- Grade-to-grade growth/loss rate—3 year average from last 3 years of Sept. 30 enrollment—numbers also diverge from methodology

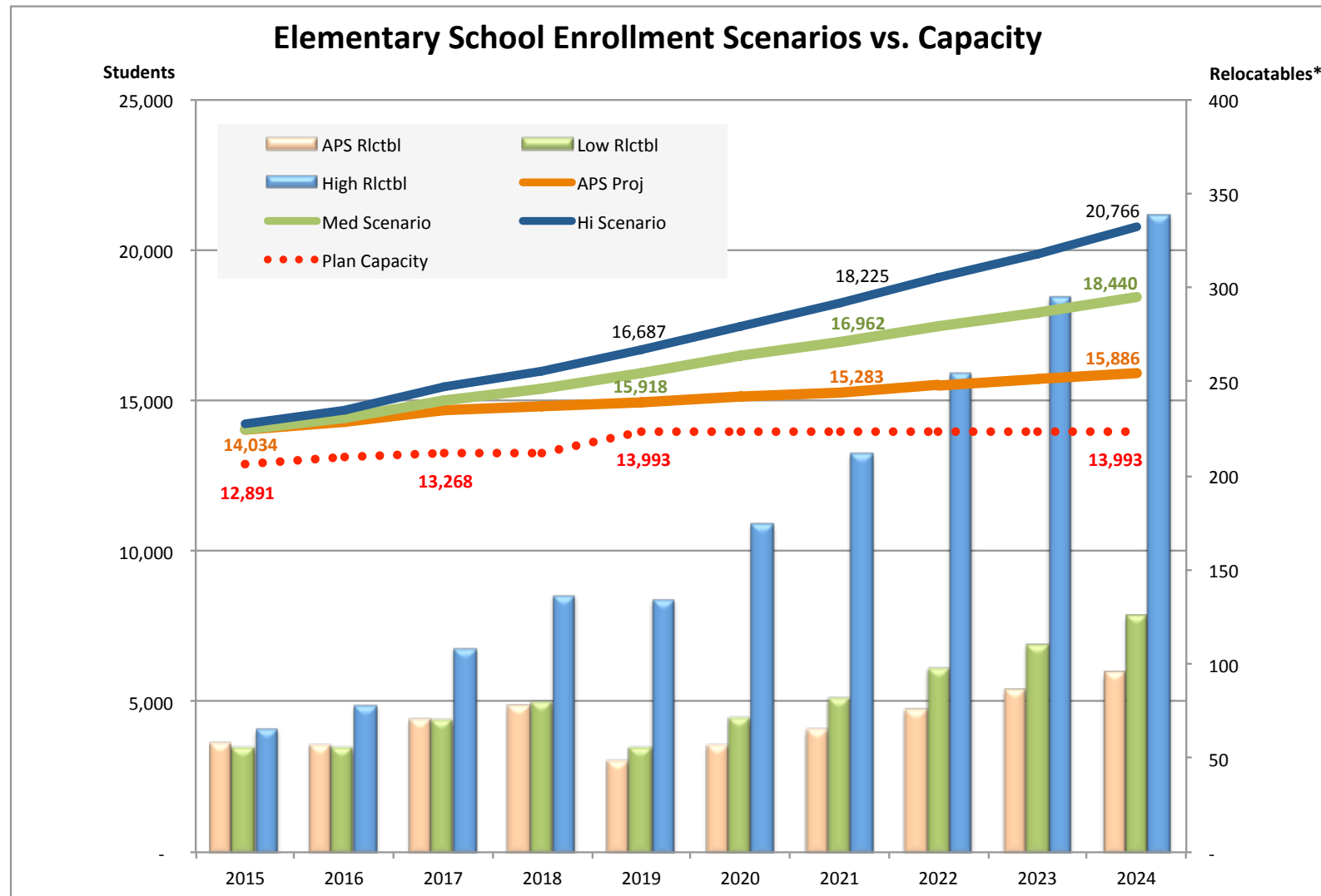
Medium Scenario

- Kindergarten growth extrapolated from last 10 years of actuals
- Grade-to-grade growth/loss rates
 - 5 year average used for grades K-8
 - 3 year average used for high school, because we have a trend towards growth in high school classes

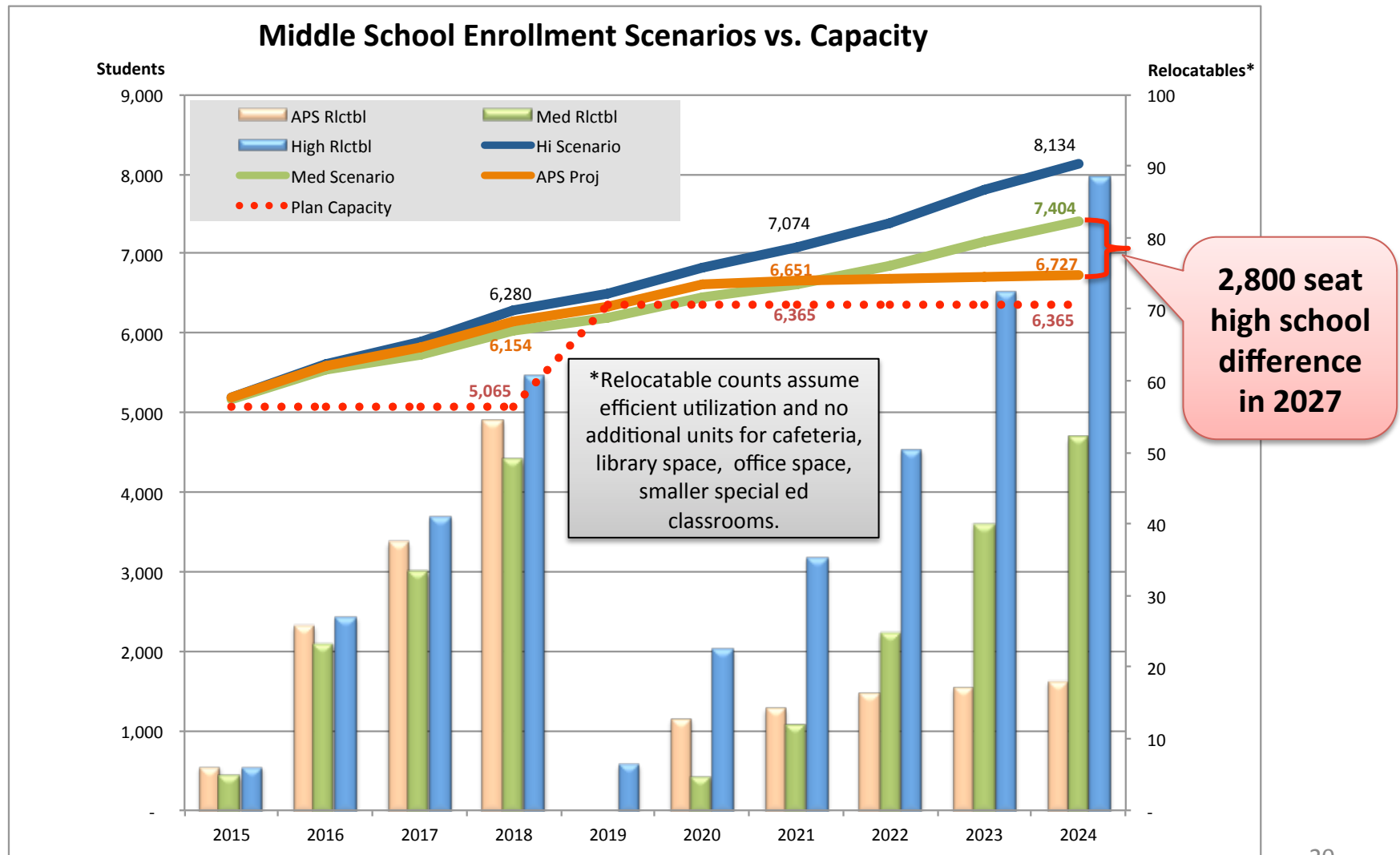
High Scenario

- Births the same as in low scenario
- Kindergarten capture ratio continues 10 year trend of growing from 55% to 75%, but with a declining growth curve to keep the capture rate below 100%
 - Falls Church is at 140%
- Grade-to-grade growth/loss rates at 2013-2014 rates
 - High school in-migration has a strong upward trend, so it could easily go higher

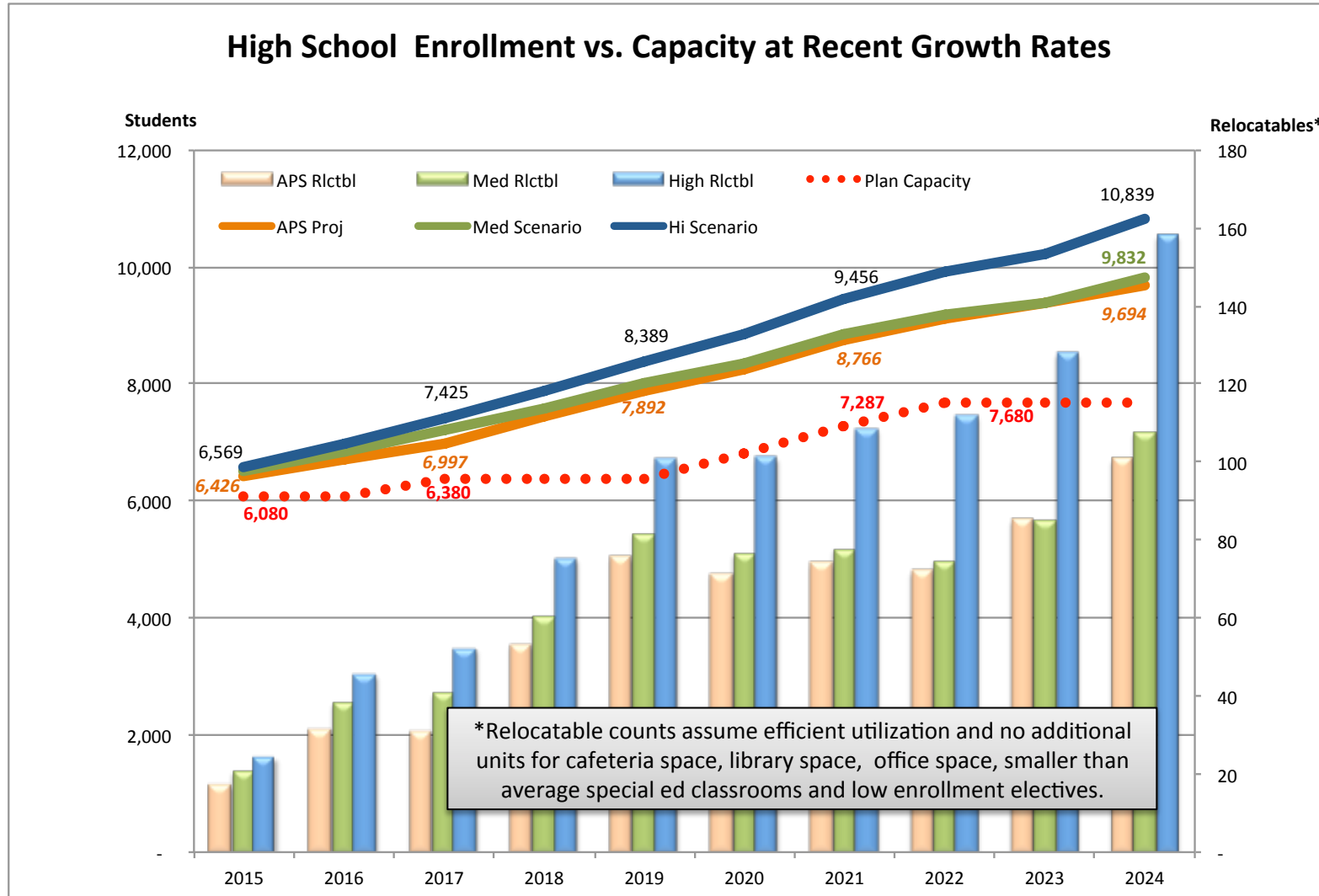
Growth in Every Enrollment Driver May Send Drive Elementary Needs Beyond Temporary Solutions



APS Middle School Projections Flatline in 2020, Despite Growth in the Elementary Projection



High School Forecast Appears to be More Accurate, But Current Construction Plans Leave More Than 2,000 Students Without Dedicated Educational Space in 2024



Non-Capital Solutions and Relocatable Classrooms

- *Roughly 3,000 APS students are in relocatables that block green space, increase energy use, add to storm runoff, and do not provide proportional amounts of locker, gym, library, cafeteria, auditorium, office, and other core spaces needed to run schools effectively.*
- *APS Master Planning Committee issued a report outlining non-capital solutions as can be found at:*
http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/110/APS%20MPC_Report.pdf

APS Wanted to Accelerate Permanent Capacity

Preferred Options: When Needed

PPROVIDES # OF SEATS WHEN NEEDED BUT NOT WITHIN BONDING CAPACITY

\$ in millions										
TIMELINE	FY14-15	FY15-16	FY16-17	FY17-18	FY18-19	FY19-20	FY20-21	FY21-22	FY22-23	FY23-24
New ES	\$2.0	\$17.5	\$20.6	\$10.2	Seats: 725					
Abingdon	\$3.4	\$19.0	\$6.4	Seats: 136						
New MS	\$3.0	\$40.0	\$55.0	\$19.0	Seats: 1300					
Career Center			\$1.0	\$1.0	\$9.0	\$48.3	\$62.1	\$27.6	Seats: 1300	
Washington-Lee	\$3.0	\$2.0	Seats: 300							

BONDING CAPACITY										
Surplus/ (Deficit)	\$35.3	(\$16.2)	(\$37.8)	(\$39.9)	(\$4.1)	(\$24.8)	(\$43.5)	(\$33.9)	\$11.1	\$29.9

But Current Funding and Costs/Seat Do Not Meet Needs Fast Enough

TIMELINE	FY 14-15	FY 15-16	FY 16-17	FY 17-18	FY 18-19	FY 19-20	FY 20-21	FY 21-22	FY 22-23	FY 23-24	Total
Seats Created (4,002 total)	Fall 2014	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022	Fall 2023	
McKinley Addition/Renovation*	\$7.5		241								\$20.1*
New ES (Jefferson site preferred)	\$2.0	\$17.5	\$20.6	\$10.2	725						\$50.3
Abington Addition/Renovation	\$3.4	\$19.0	\$6.4	136							\$28.8
Secondary Seats to be determined	\$4.0	\$5.0**	\$41.6	\$57.9	\$17.5	1300					\$126.0
Career Center			\$1.0	\$1.0	\$9.3	\$56.1	\$49.4	\$36.6	1300		\$153.4
Washington-Lee	\$3.0	\$2.0	300								\$5.0
MC/MM	\$4.1	\$6.2	\$7.7	\$5.9	\$7.2	\$7.4	\$7.6	\$7.8	\$8.0	\$8.2	\$70.1
TOTAL	\$24.0	\$49.7	\$77.3	\$75.0	\$34.0	\$63.5	\$57.0	\$44.4	\$8.0	\$8.2	\$453.6

BONDING CAPACITY											
Bond Issuance Capacity	\$58.3	\$33.2	\$69.0	\$34.0	\$52.0	\$35.0	\$51.0	\$44.4	\$8.0	\$8.2	\$393.1
Surplus/(Deficit)—Cumulative	\$34.3	\$22.8	\$14.6	(\$26.4)	(\$8.4)	(\$36.9)	(\$42.9)	(\$42.9)	(\$42.9)	(\$42.9)	
Bonding Capacity Needed				\$26.4		\$10.5	\$6.0				\$42.9
Overall Debt Ratio with Additional Debt	8.76%	9.02%	9.31%	9.56%	9.85%	9.84%	9.96%	9.86%	9.78%	9.55%	

http://www.apsva.us/cms/lib2/VA01000586/Centricity/Domain/99/2015%20CIP%20Budget_Final_Web.pdf

Arlington Must Plan For Likely School Growth

APS should:

- Incorporate more realistic demographic projections in its CIP;
- Provide sensible capital investment options beyond a 10 year planning horizon— current planning does not have any plan to accommodate the 2024 middle school cohort in high school;
- Maximize the school contingency reserve;
- Reverse the recent APS decision to move 7+ building headcount from the operating budget to the capital budget as this will reduce available capital funds by \$10 million over 10 years.
- Consider increasing maximum school sizes. We may need two more comprehensive high schools.

The County Board must seriously consider prioritizing land and financial resources.

The Board should:

- Begin discussion of options such as such as developer contributions (proffers), public-private partnerships, deferral of county capital projects, and/or higher debt service limits to free up resources for school construction
- Consider temporary growth limitations on development. We cannot continue approving high density housing without additional resources for school seats

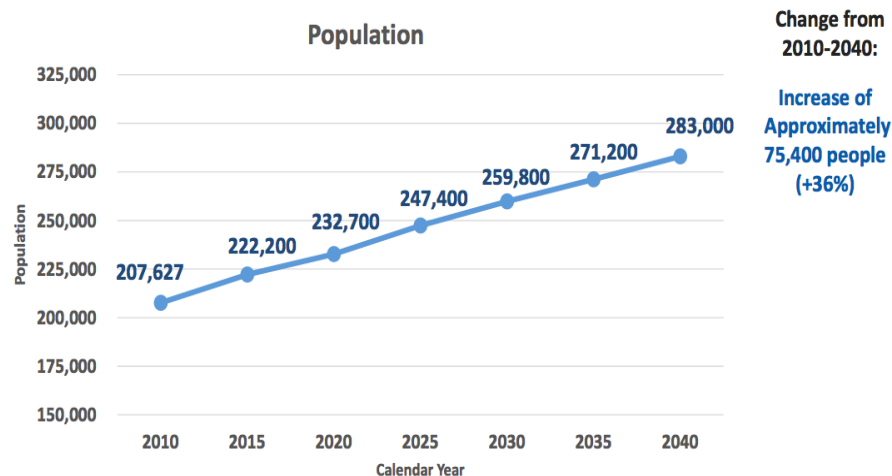
Appendix

County Housing and Population Projections at Current Growth Rates

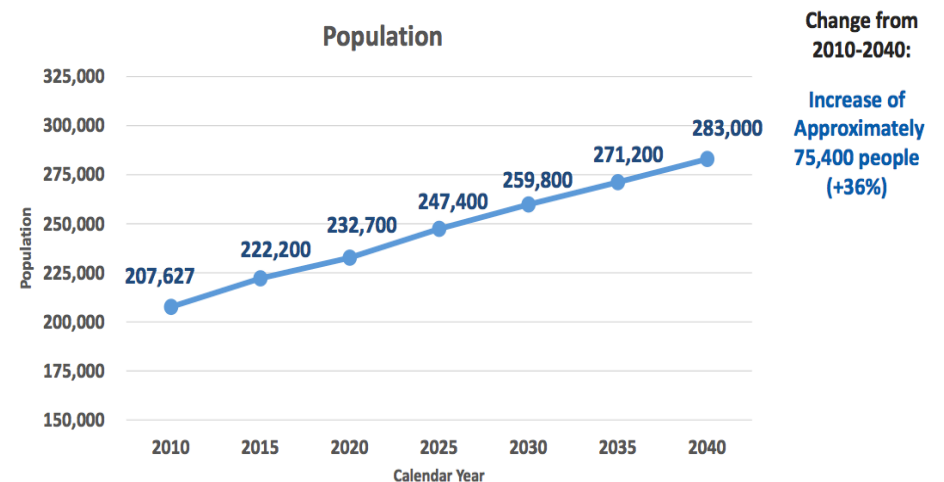
0.92% Compound Annual Growth Rate (CAGR) in Housing Units. Expansion in number of bedrooms per household from renovation/rebuilding adds student capacity on top of unit growth.

APS will not overbuild given this population growth. Housing costs are rising faster than incomes and also increase student yield from multitenant units.

Arlington Forecast
Results - Preliminary Round 8.4 Forecast

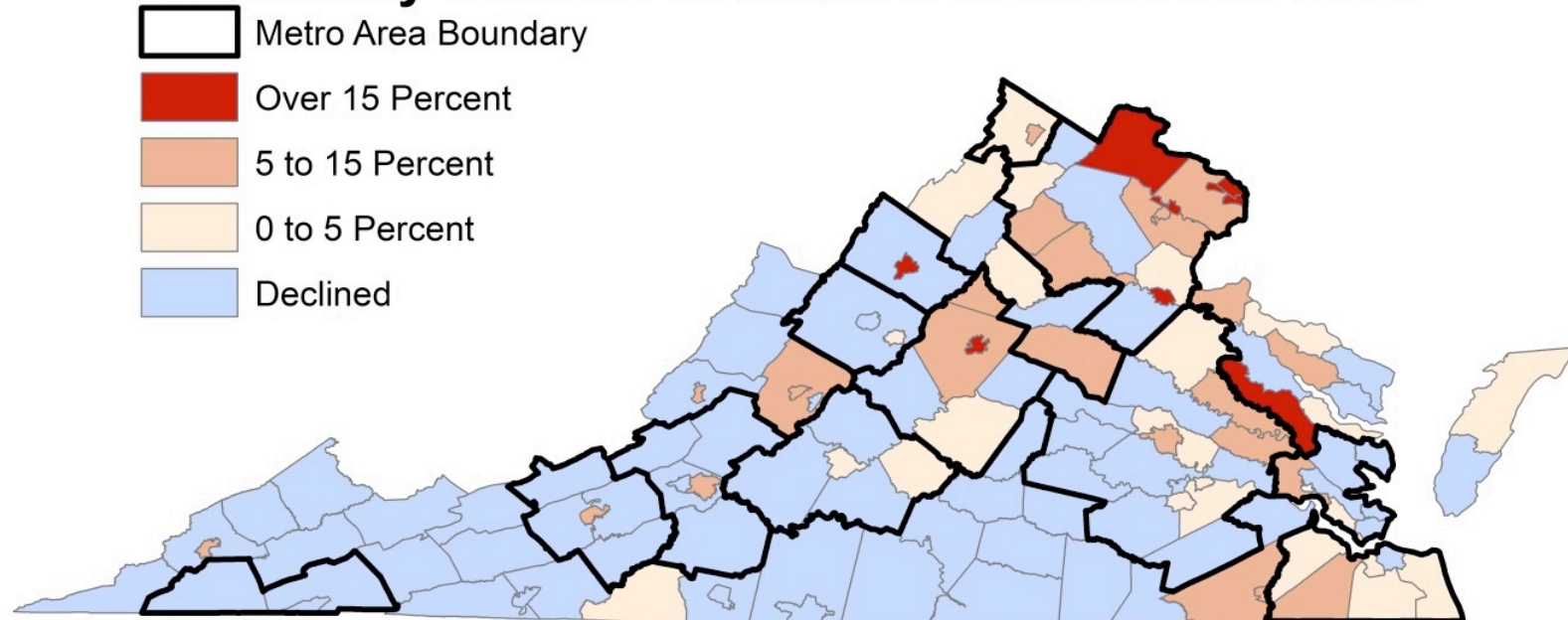


Arlington Forecast
Results - Preliminary Round 8.4 Forecast



Growth and Overcrowding In Neighboring Areas Increase Arlington's Appeal and Property Values

Elementary School Enrollment Growth 2008-2013



<http://statchatva.org/2014/04/08/as-more-families-choose-cities-governments-are-returning-to-the-drawing-board/>

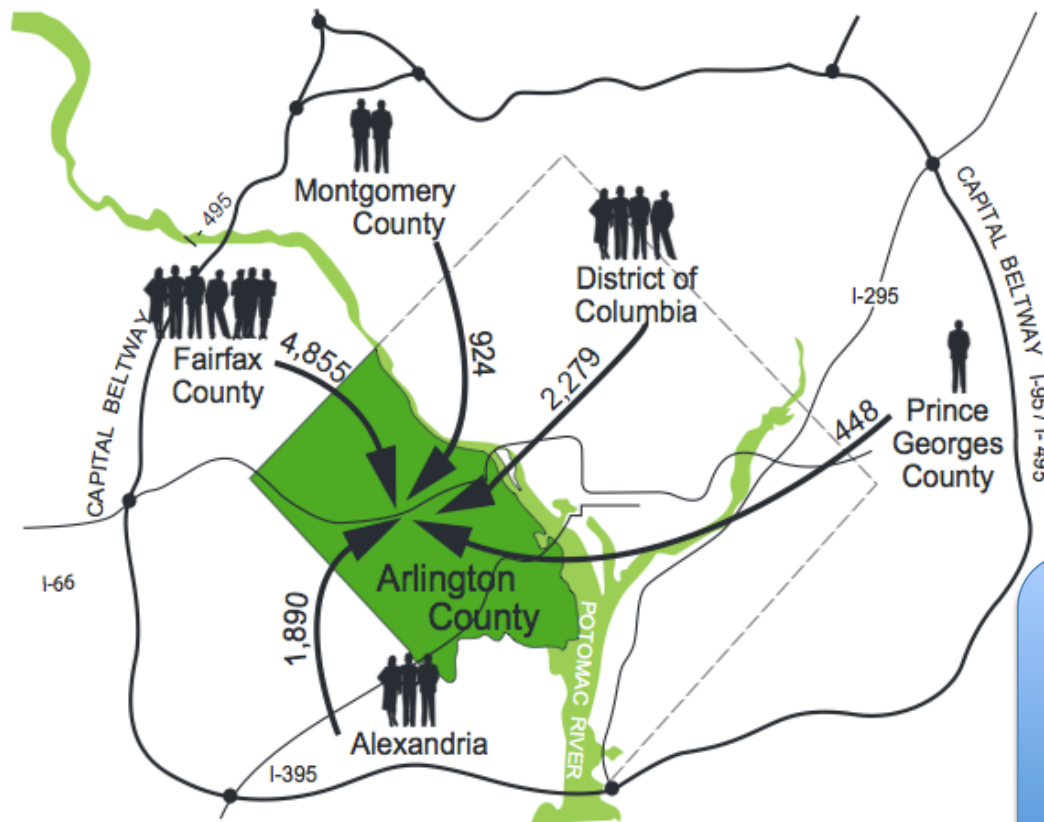
- Parents must have commutes that enable them to meet day care drop-off and pick-up times
- As population grows faster than transportation, practical commuting distances shrink
- As jobs have increased in the Tysons – Leesburg corridor and housing prices outside the Beltway have risen, condos and townhouses in Arlington become more attractive to families

Other Enrollment Growth/Loss Drivers

- Job loss/creation within commuting distance drives family in-/out-migration and impacts enrollment at all levels
 - For families moving in, the relative attractiveness of an area and its schools compared to other areas within commuting distance
 - Housing costs limit many families' options
- Housing unit growth and turnover in multi-bedroom units that attract families determine availability to families
- Migration within an area for perceived school quality—e.g. the exodus of DC students prior to middle school
- Growing commuting times and costs keep Arlington attractive
- Cost and availability of private school or moving to jurisdictions perceived to have superior schools
- Births among long term residents
- Age trends for household formation and childbirth

Arlington is Getting Net In-Migration

POPULATION MIGRATION - INFLOW (2009 - 2010)



From other parts of VA. 2,504
From other parts of MD 522
From other states 9,873
From other countries 745

Source: Internal Revenue Service, 2009-2010
County-to-County Migration Inflow.
Based on number of exemptions

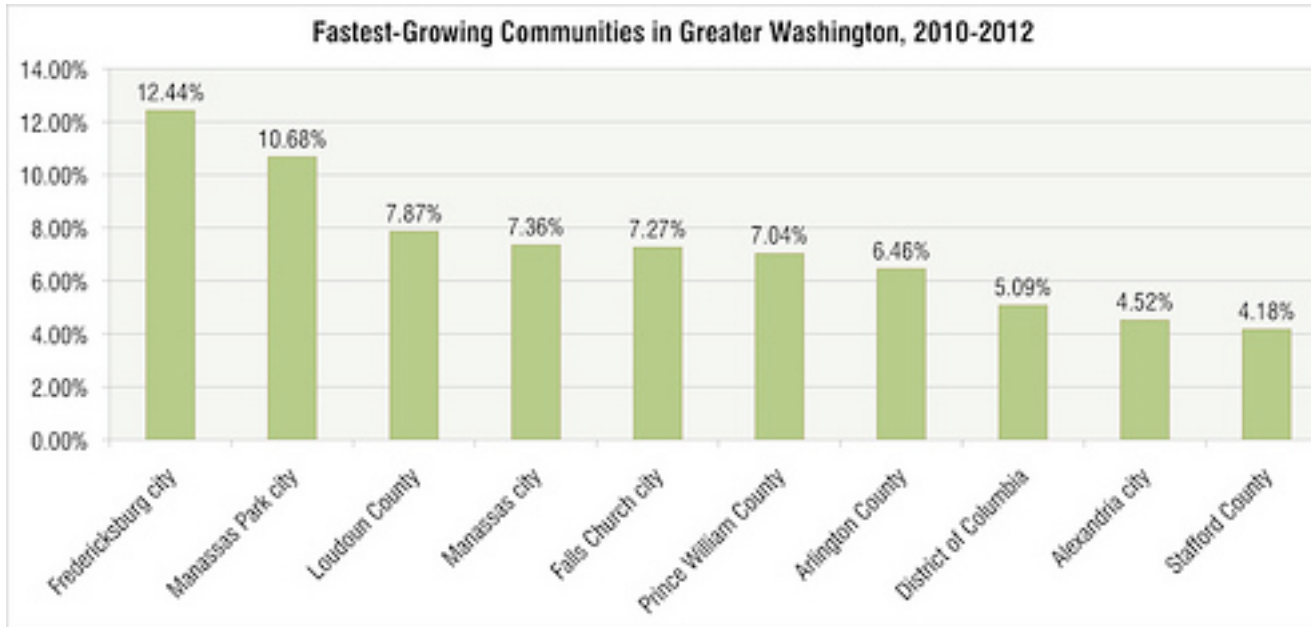
35% of DCPS students leave the DC school system in 4th or 5th grade.

http://www.washingtonpost.com/local/education/middle-schools-present-vexing-problem-for-dc-leaders-as-parents-choose-other-options/2014/02/17/29b95e24-93ef-11e3-83b9-1f024193bb84_story.html

Source Arlington County

<http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/03/Arlington-Profile-2013.pdf>

Regional Growth Data Points To Higher Long Term Enrollment Growth Than Suggested By the APS Forecast



"A report by the University of Virginia's Weldon Cooper Center for Public Service Demographic Research Group showed that Arlington County's population grew by 9.4 percent from the 2010 Census through July 2013.

"Arlington has grown quite a bit in the last three years. It...ranked third in the state," said [Qian Cai](#), the center's director of demographics. Only Loudoun County, which grew by 11.4 percent, and Fredericksburg, which grew by 15.1 percent, showed larger increases....

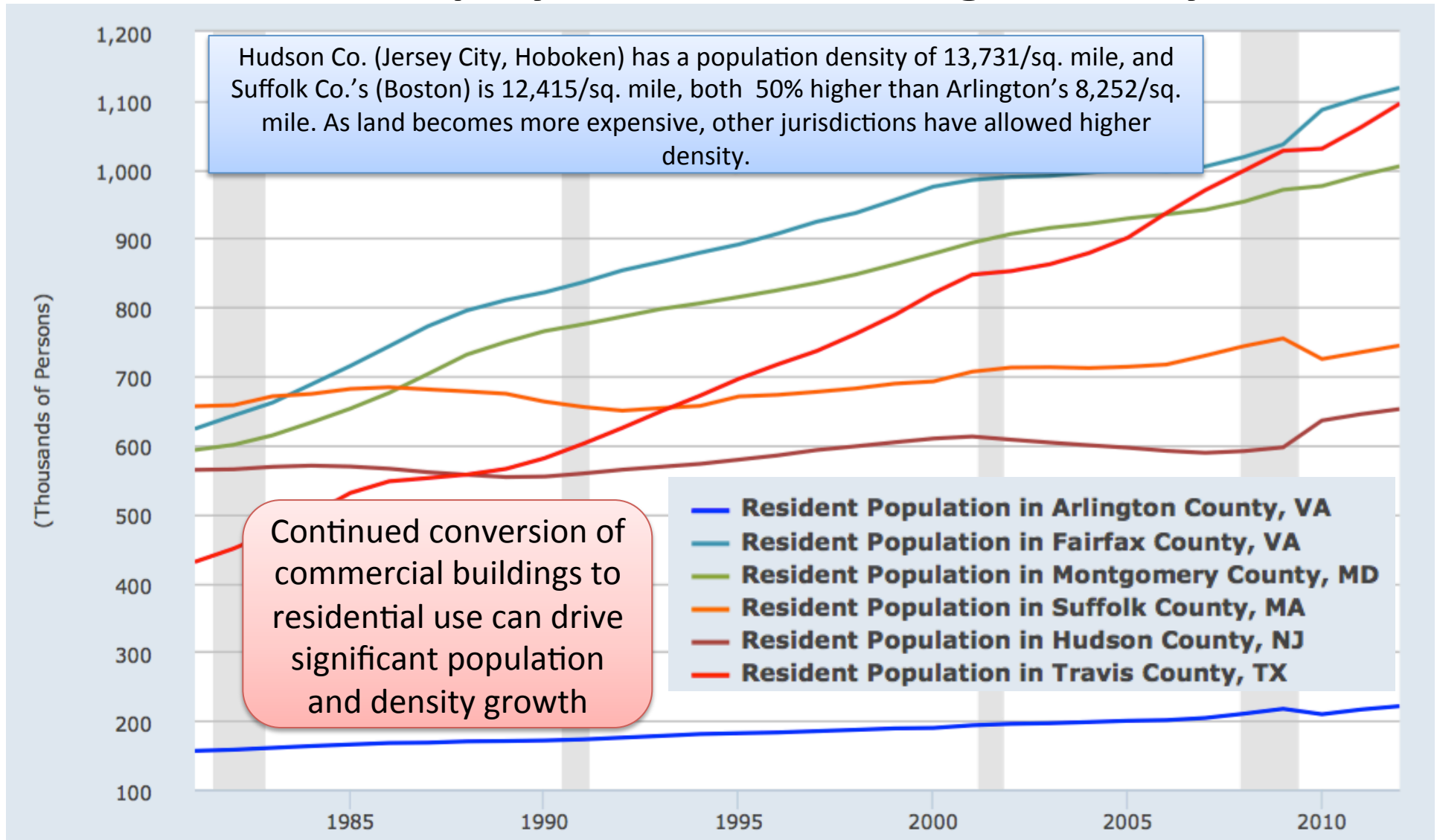
"The growth is part of a larger trend in which urban areas account for most of the statewide population increase."

<http://www.washingtontimes.com/news/2014/jan/29/arlington-county-among-fastest-growing-in-virginia/#ixzz3V9m30at7>

"Of the 224,000 people who moved to Greater Washington between 2010 and 2012, 62% of them moved to the city and inner suburbs. As a result, the core and inner ring now contain 69% of the region's total population... Roughly 1 in 7 new residents moved to the District of Columbia, while 22% moved to either DC, Arlington or Alexandria."

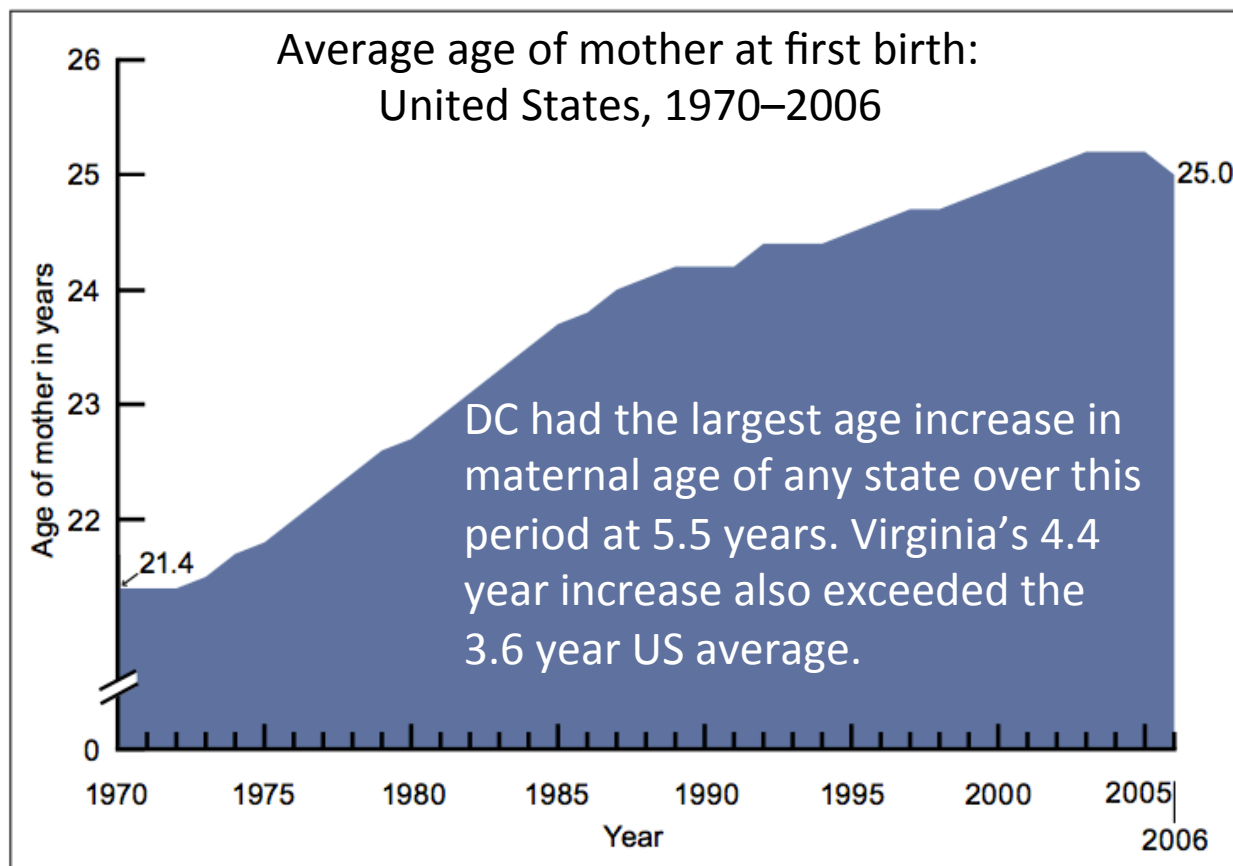
<http://greatergreaterwashington.org/post/18078/washington-growing-more-at-the-center-less-at-the-edges/>

Population Growth in Metro Areas with Tech & Gov't Employment Leads to High Density



Source: <http://research.stlouisfed.org/fred2/graph/?g=19zf>

Increases in Initial Maternal Age Have Stopped



SOURCE: CDC/NCHS, National Vital Statistics System.
<http://www.cdc.gov/nchs/data/databriefs/db21.pdf>

- Increased maternal age delayed entry of children into school and reduced total childbearing years
- Delayed household formation after financial crisis may also have caused a delay in maternity
- New research linking maternal and paternal age to developmental issues may reverse this trend, accelerating enrollment growth
www.newrepublic.com/article/politics/magazine/110861/how-older-parenthood-will-upend-american-society

APS Is Attracting Large Numbers of New Students in 8th through 10th Grade

